

**“When you preach water and you drink wine”
Exploring the implementation, use and management
of WASH in healthcare facilities: A Case Study from
Kenya**

by

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This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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I hereby declare that as lead author on all three manuscripts, I was responsible for the research conceptualization, data collection and analysis. I was also responsible for drafting and submitting all the articles for publication in the respective peer-reviewed journals. I also addressed all the comments from peer-reviewers. The other co-authors adopted a supervisory role, providing directions in data collection and feedback on draft manuscripts. Dr. Susan J. Elliott, as the primary supervisor, provided significant direction and editorial assistance.

Abstract

Health care facilities (HCFs) are lifesaving resources for the sick in communities however, the inadequacy of basic necessities such as water, sanitation, hygiene, waste management and environmental cleaning (WASH) often affect the quality of care they dispense. Adequate WASH services in HCFs are critical for infection prevention and control. Yet the WHO/UNICEF joint monitoring program for water supply, sanitation and hygiene report indicates that only 51% and 23% of HCF in sub-Saharan Africa (SSA) have basic access to water and sanitation, respectively. These facilities are burdened during emergencies as seen in the case of the COVID-19 pandemic. Global commitments to improving access to WASH in HCF surged in 2015. The sustainable development goals (SDGs) *6-ensure access to water and sanitation for all* and *3-ensure healthy lives and promote wellbeing for all at all ages* further highlight the need for WASH in HCFs. However, socially and institutionally driven challenges are major hindrances to improved service provision in SSA. This thesis employs a political ecology of health (PEH) and the Sendai Framework for disaster risk reduction to explore the social, economic and ecological processes hindering access to and the contributions of safe WASH to resilient HCFs and communities, using Kisumu, Kenya as a case study.

The research has three broad objectives. First, document the policy context for WASH in HCFs in Kenya. Second, to investigate the psychosocial impacts experienced and coping strategies employed by patients, caregivers and healthcare workers due to inadequate WASH in HCFs. Third, to explore the impacts of the COVID-19 pandemic on WASH services in HCFs and community residents who access the HCFs.

The research was conducted in partnership with Community Health Support (COHESU), a Kenyan Non-Governmental Organisation supporting sustainable health activities in communities

in the Lake Victoria region. Data were collected in two phases. From May to September 2019, 17 relevant policy documents were gathered in the first phase. Concurrently, interviews were conducted with health care providers regarding access to WASH and the role of WASH in responding to emergencies like disease outbreaks, building resilient HCFs and emergency preparedness. In-depth interviews in one informal settlement and three rural dispensaries with key informants (KIs) (n=13), healthcare workers (n=16), as well as community members (n=39). While those data were being analyzed, a global pandemic was declared on March 11, 2020. To capture stakeholder reflections during this natural experiment, follow-up virtual interviews were undertaken with a subset of key informants. Results allow us to engage with the hypothetical and the real to assess recommendations for moving forward. The second phase involved follow-up interviews with KIs (n=15) were conducted between August and September 2020 regarding the impact of COVID-19 and the role of WASH services in emergency preparedness in health systems and communities.

Findings from the first phase of this research indicate none of the national documents mentioned all the components of WASH in healthcare facilities. WASH in HCFs in Kenya remains fragile. Power and politics influence institutional challenges such as corruption, inadequate financing, prioritization as well as weak stakeholder collaborations that shape the integration of WASH in HCFs. Ecological factors (floods, disease outbreaks) compromised WASH infrastructure and the resilience of HCFs. 44 percent of participants were of the perspective that HCFs were not building resilience for emergencies and would not be able to recover should a serious disease outbreak occur due to inadequate access to WASH services. Also, 38% of participants however felt the HCFs were prepared for any emergency because of the health referral system but this view was dependent on available resources within the health system. Findings from

the second phase indicate institutional challenges observed during the first phase were amplified during the COVID-19 pandemic. All participants indicated that the health system was ill-prepared for the pandemic and leaders were overly reliant on donors for support. Health workers were psychosocially burdened and subsequently embarked on strikes in protest. These situations influenced citizens' perceptions of the COVID-19 pandemic as a hoax and caused a surge in some health measures such as maternal mortality rates.

This research offers theoretical, methodological, policy and practice contributions, Employing PEH in this research is important for understanding and expanding knowledge on multiscale (global, national, county) analysis of how access to WASH in HCF is embedded within social networks that are produced, and reproduced, over time. This research contributes to the calls for qualitative research, to identify approaches most effective in reducing infection by providing insights into enablers and barriers of quality healthcare services in SSA by using multiple qualitative methods. Moving forward, we recommend the need for authentic partnerships among multiple stakeholders to develop context-driven sustainable solutions to WASH and emergency preparedness. We emphasize the need to legislate these solutions to ensure continuity. Community members should continue to engage their development leaders to demand basic human rights such as water. To achieve SDG 6, prioritization of WASH is required at all levels.

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Dedication

I dedicated this work to my mama, Alimata Abu and sister, Brenda Ariba Zarhari Abu (PhD)

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List of Abbreviations

COHESU	Community Health Sport
DHIS	District Health Information Software
DHMT	District Health Management Team
DRR	Disaster Risk Reduction
GDP	Gross Domestic Product
GNI	Gross National Income
HCFs	Health Care Facilities
HDI	Human Development Index
HMIS	Health Management Information Systems
IDIs	In-depth Interviews
JMP	Joint Monitoring Programme
KI	Key Informants
LMICs	Low and Middle-Income Countries
MDGs	Millennium Development Goals
NGO	Non-Governmental Organisation
PEH	Political Ecology of Health
RA	Research Assistant

SDGs	Sustainable Development Goals
SSA	sub-Saharan Africa
UN	United Nations
WASH	water, sanitation and hygiene
WHO	World Health Organisation
UHC	Universal Health Coverage
UNICEF	United Nations International Children's Emergency Fund

Chapter 1: Introduction

1.1 Research Problem

Access to safe water, sanitation and hygiene (WASH) is a basic human right (UN, 2010) and a requirement for good health (WHO/UNICEF, 2017). However, about 844 million people lack access to basic water sources and 2.3 billion people lack basic sanitation (WHO/UNICEF, 2017), with almost 50 percent of these living in sub-Saharan Africa (SSA) (WHO/UNICEF, 2017). The lack of access to WASH in this context is exacerbated by climate variability in several ways. First, 90 percent of disasters in SSA, especially the horn of Africa, are water-related (International Monetary Fund, 2016). Prolonged drought and floods have affected the quantity and quality of water available (Hutchings et al., 2017; Valois et al., 2018). Second, 2.5 million people in the horn of Africa are currently displaced leading to WASH related challenges in camps (UNOCHA, 2017). Also, infrastructural failures continue to fuel open defecation. At the community level, Khanna & Das (2016) in their studies in India reported that women complained about the poorly designed and constructed nature of WASH facilities as reasons why they do not use them. For example, some toilet facilities lacked seats or slabs, were poorly lighted or without keys hence lacked safety. Situations of this nature further increase health risks and disease outbreaks yet many Health Care Facilities (HCFs) in Low and Middle-Income Countries (LMICs) lack basic WASH services (WHO/UNICEF, 2015). Health care facilities without access to WASH facilities compound the challenge of the high risk of WASH-related diseases (Bartram & Cairncross, 2010) and can lead to several other adverse effects including new infections (urinary tract infection) and cross-infection of diseases. Ragusa et al. (2018) recorded 21.2 percent positive cases of *Clostridium difficile* infection- the most common cause of health-care-associated infectious diarrhea among 854 patients in Italy over a two-year surveillance period. According to them, *Clostridium difficile*

infection is increasing in severity and frequency over time. They found compliance to hand hygiene was inversely associated with the number of *Clostridium difficile* infections. The lower the compliance of healthcare workers to hand hygiene the higher the number of cases of *Clostridium Difficile* infections. Inadequate WASH in HCFs if not curtailed, could further aggravate health burden as according to the UN, by 2050, at least one in four people is likely to live in a country affected by recurring shortages of freshwater. WHO/UNICEF (2015) in their report indicated that many health care facilities in low and middle-income countries are ill-prepared to manage in times of emergencies as experienced during the 2016 Ebola outbreak in West Africa and the current COVID-19 global pandemic.

Global initiatives for ensuring WASH in HCFs were unevenly achieved through the Millennium Development Goals (MDGs) (2000-2015). Access to WASH was not one of the MDGs; rather, ensuring access to safe WASH services was integrated as targets under related goals. For instance, within MDG 7, *ensure environmental sustainability*, the UN community set a target to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015. Ensuring access to WASH is critical for safe child delivery hence critical to achieving MDG 5 *improve maternal health*. More than a decade has passed since these initiatives, yet access to safe WASH in HCFs remains a major challenge in SSA. As the world transitioned from MDGs to Sustainable Development Goals (SDGs) in 2015, ensuring access to WASH gained global attention as a critical need for development and thus is explicitly represented in the SDGs, goal 6 *ensuring access to water and sanitation for all*. Furthermore, significant efforts towards ensuring access to WASH expanded beyond the household to public spaces such as HCFs. Targets 6.1 and 6.2 of the SDGs highlight the need to expand WASH monitoring by relevant stakeholders beyond the household to include non-household settings, such as HCFs. Also, target 3.8 of SDG

3-ensure healthy lives and promote wellbeing for all ages-emphasizes the need for quality essential health care services as part of implementing and achieving universal health coverage (UHC). Similarly, in 2015, world leaders adopted the Sendai Framework for Disaster Risk Reduction (DRR) and one of its targets is to substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health facilities, including through developing their resilience by 2030 (United Nations, 2015). This framework represents a paradigm shift from managing disasters to disaster risk reduction. Achieving this target means ensuring the effectiveness and efficiency of all the components of a healthcare system, including WASH. However, it is evident that socially-and institutionally-driven challenges, including inadequate data, are major hindrances to decision making and improved service provision in HCFs in SSA (WHO/UNICEF, 2015; Elliott, 2017; Rosenberg, 2017). Using Kenya as a case study, the research presented in this thesis addresses the following objectives:

1. To document the policy context for WASH in HCFs in Kenya.
2. To investigate the psychosocial impacts experienced and coping strategies employed by patients, caregivers and healthcare workers due to inadequate WASH in HCFs.
3. To explore the impacts of the COVID-19 pandemic on WASH services in HCFs and community residents who access the HCFs.

1.2 WASH and Health Nexus

Access to safe and readily available water is a basic requirement for good health. The Ottawa Charter for Health Promotion defines health as a resource for everyday living that allows us to cope with and manage and even change our environment (Gatrell & Elliott, 2015). This definition explores the availability of resources or social determinants that shape health within a place. Hippocrates' thesis, *On Airs, Waters and Places*, highlights the links between the

environment and health (Gatrell & Elliott, 2015). For instance, access to basic needs, including safe water, is critical for sustaining life. The United Nations defines water security as the “*capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development; for ensuring protection against water-borne pollution and water-related disasters; and for preserving ecosystems in a climate of peace and political stability*” (UNU-INWEH, 2013). The definition incorporates challenges of sanitation and hygiene practices which are important measures to achieving improved health and wellbeing. Ingestion and contact with unsafe water are risk factors to disease transmission within a particular area or beyond as seen in the cases of diarrhea (Prüss-üstün et al., 2019). Other health researchers including Hunter (2003) and Dickin & Schuster-Wallace (2014) have linked inadequate WASH services in communities to the widespread of schistosomiasis in northern Ghana and Dengue fever in northeastern Brazil respectively. The inadequacy of safe water to practise hygiene continues to increase the spread of these diseases and increase the burden on health care facilities in these places. The concept of place in healthcare research illuminates how the nature of health services provided within a place are dependent on complex and intersecting contextual factors across geographic scales as well as influenced by various actors (Cutchin, 2007).

Researchers have highlighted the need for WASH services in HCFs as key for providing a safe environment for the provision of care in LMICs, particularly those in SSA (Bartram & Cairncross, 2010; Bennett et al., 2015). Furthermore, HCFs require efficient infrastructure in order to enhance their resilience to shocks of emergencies (for example disease outbreaks such as the COVID-19 pandemic and extreme climate events such as flooding) whilst providing health services that are robust in the face of stressors (Kieny & Dovlo, 2015). An inconsistent supply of

water limits activities like handwashing and washing of bedsheets (Benova et al., 2014; Cronk & Bartram, 2018). As a result, some HCFs barely fulfill their role of supporting their patients, especially women, during childbirth (Opondo et al., 2009; Essendi et al., 2015). Existing literature has linked neonatal sepsis and maternal mortality to poor hygiene resulting from inadequate access to safe WaSH services in LMICs (Azad et al., 2016; Blencowe et al., 2011). Unhygienic practices in communities and HCFs contributed to the spread of infectious diseases including the Ebola outbreak in SSA that killed many people, including healthcare workers (Shoman et al., 2017; World Health Organization, 2014).

In 2015, the World Health Organisation (WHO) and the United Nations International Children's Emergency Fund (UNICEF) surveyed the availability of WASH facilities within 500m of health facilities in LMICs and found that 38 percent of these facilities do not have improved WASH facilities. Should functionality and safety of supplies of the WASH infrastructures be included, the coverage of access to WASH in healthcare facilities is further reduced. The study also explored WASH access inequalities in HCFs and found rural-urban disparities in access to WASH in HCFs. For instance, in Kenya, 58 percent of hospitals in urban areas had access to water compared to 35 percent in primary healthcare centers in marginalized and rural areas (WHO/UNICEF, 2015). Similarly, Cronk & Bartram (2018) evaluated the environmental conditions of HCFs in 78 LMICs and found that only 2 percent of the HCFs provided water, sanitation, hygiene, and waste management services. Their criteria for the evaluation of environmental conditions of a HCF included safety and functionality of the water, sanitation, hygiene, and waste management services. This study expanded WASH literature by considering functionality and safety.

In a comparative study of India and Uganda, Kohler et al. (2017) sought to address the gender gap in access to WASH in HCFs. They undertook a needs assessment in hygiene and sanitation issues during menstruation and childbirth among women. The study sites included HCFs such as maternity wards and inpatient facilities. WASH in HCFs was assessed based on hygiene and health, security and safety, privacy, accessibility, comfort, and menstrual hygiene management. They documented that the lack of safe WASH infrastructure and menstrual hygiene facilities was a burden for women in both countries. Gon et al. in 2016 added another layer to the gendered impacts of WASH by examining the effects of water and sanitation in relation to childbirth in HCFs and homes. The authors engaged in a multi-country analysis using data from the Demographic and Health Survey (DHS), Multi-Indicator Cluster Survey (MICs) and Service Provision Assessment (SPA). Women who gave birth at home had to have a live birth in their household in the two years preceding the survey in order to participate in the study. The determining factors for access to WASH for women who gave birth at home were based on their socio-economic, education and rural or urban status. Healthcare facilities were also classified into private or public hospitals, public health centers, private or public dispensaries and mission facilities. The findings revealed that less than 50 percent of all delivery facilities and homes had access to WASH in all countries. For example, in Kenya, only 18 percent of women delivered with improved access to water and sanitation. However, women who delivered at HCFs were more likely to access improved water and sanitation compared to those who delivered at home. In contrast, less educated, rural and poor women who delivered at home in sub-Saharan Africa had the least access to water and sanitation.

The global community (represented by WHO, UNICEF and UN) has developed guides, monitoring tools and frameworks stipulating the minimum quantity and quality of WASH services

each healthcare facility type should have, as well as highlighting the role of relevant stakeholders. For instance, WHO published the “*WHO Essential environmental health standards for healthcare*” in 2008, the “*WHO Guidelines on core components of infection prevention at the national and acute healthcare facility level*” and the “*Water and sanitation for health improvement tool*” (WASHFIT) in 2016. The WASHFIT tool is a continuous risk-based assessment tool for improving and sustaining WASH infrastructure in LMICs by aiding healthcare facility managers to effectively prioritize their needs, particularly in a changing climate.

First, there is the need to explore the capacity of the HCFs to withstand shocks. This is necessary to ensure the resilience of WASH infrastructure in the face of extreme weather conditions and rampant disease outbreaks. It is essential to holistically assess WASH beyond the presence of the physical infrastructure to explore strategies for improved WASH in healthcare facilities through the experiences of relevant stakeholders. This will ensure that health facilities are not unduly weakened by disaster impacts and can adequately respond to save lives that are impacted by disaster, even during multi-year emergencies such as droughts. This is critical to inform the development of alternative measures for addressing this significant global gap. As will be explained in the following section, health geographers have an important role to play in highlighting the current and emerging WASH in HCF as well as healthcare and place across multiple scales.

1.3 Geographies of Health and Health Care

The Health geography as a subdiscipline transitioned from medical geography in the early 1990s. Health geographers’ engagement with place and socio-cultural theoretical frameworks were fundamental to the transition (Brown et al., 2009). Health geographers have increasing interest beyond disease and illness to broader social models of health and health care and wellbeing

(Kearns & Moon, 2002). Hence, health geographers are keen to explore the health and wellbeing implications of geographical factors such as economic, political, cultural and social within a place among populations. Places can be health-promoting or damaging. Researchers within this subdiscipline also explore differences such as class, ethnicity, gender, and sexuality coupled with broader structures that influence human agency within a place. The incorporation of structure-agency dynamics in this work recognizes that health and wellbeing are produced by a multiplicity of processes across scales. In so doing, this transition provided the 'capacity to integrate people and places' and 'the local and the global' (Kearns & Moon, 2002). This reveals how the health of people, healthcare systems, and place are intrinsically connected (Gatrell & Elliott, 2015). Research on WASH in health geography has focused on the exposure risk of contaminated water as well as the health experiences of people in such places (Sultana et al., 2011). Risk in health geography refers to the probability or likelihood of being exposed to hazards or vulnerabilities. Sultana (2007) researched the exposure and embodiment of arsenic contaminated water and its effects on health and wellbeing in rural Bangladesh. Health geographers also explore wellbeing and its links to experiencing water related diseases or inadequacy. Bisung & Elliott (2017) and Kangmennaang et al.(2019: 2020) highlighted the emotional stress of inadequacy of WASH services in Ghanaian and Kenyan communities. These studies associated emotional distress with water quality uncertainties, water price hikes, and being unable to maintain ones' personal hygiene. WASH inequities also caused feelings of frustration and neglect in some of these communities. Bisung & Elliott (2016) highlighted emotional concerns about quality healthcare services in communities with inadequate WASH access in their research in Kenya. Health geographers also explore the links between WASH and insecurity. Abu et al., (2019) and Stevenson et al. (2012) research in Kenya and Ethiopia associated inadequate access to WASH services to assaults,

including rape and murder, during water collection periods or accessing sanitation services. There were concerns about the quarrels and other disturbances associated with competing users with limited safe WASH sources. Some health geographers continue to explore how broader structures affect access to WASH services. Bisung et al. (2016), Harris & Morinville (2013) and Stoler et al. (2012) explored how government decision to privatize and commercialize water services as well as eliminate pro-poor WASH policies increased inequities in accessing WASH. Health geographers also engage in research that explores the agency of communities with inadequate WASH services through social capital and collective action in SSA (Bisung et al., 2014).

Issues of healthcare are critical as anthropogenic and natural activities continue to change the global environment and increase health and disease risks. Models and theories shaping health and healthcare encompass different determinants of health including social, cultural, political and economic environments. Health geographers have engaged in significant research on healthcare systems planning and management. As such, researchers in this subdiscipline have focused on exploring the spatial distribution of medical facilities and services, including the availability of the appropriate health personnel, the accessibility of these facilities and the role of capitalism in accessing healthcare (Litva & Eyles, 1995; Mayhew, 1986). For instance, Cheng et al. (2011), Harrington et al. (2014), Rosenberg (2016) and Yao et al. (2013) explored the complexities of access to reproductive health services, screenings and preventative services. Other studies have looked at the professionalism and the behaviour of health personalities (Carolana et al., 2006; Liaschenko et al., 2011). Health geographers have explored the links between psychosocial health and structural design as well as other commercial activities within health facilities (Rosenberg, 2017; Gesler & Kearns 2002). In financing health services, Kuuire et al. (2017) and Dixon et al. (2014) highlight inequities in accessing health insurance scheme in Ghana. Gendered and religious

factors hindered access to the health insurance scheme. Atuoye et al. (2015) in their research in Ghana highlighted how unsafe transportation and poor road networks hinder antenatal and other maternal care services access in rural Ghana. Framing healthcare research through broader social models of health services continue to inform perspectives on the role of basic amenities including WASH to health care access. Although health geography researchers have explored these diverse topics on healthcare services, however, research on quality health services and WASH in HCFs in the global south is limited.

1.3.1 Sendai Framework

The Sendai Framework for Disaster Reduction 2015-2030 informed the design of this research project. This framework was adopted during the third United Nations World Conference on Disaster Risk Reduction held in March 2015 in Japan. The Sendai Framework replaced the Hyogo Framework for Action 2005-2015: building the resilience of nations and communities to disaster. Due to the growing rates of disasters globally. The framework was designed to aid states build resilience to disasters in the context of the SDGs as well as poverty reduction into policies, plans, budget, and programmes across all levels of governance. This framework has 13 guiding principles and seven global targets. The framework has four priorities for action including understanding risks, strengthening disaster risk governance to manage disaster risk, investing in disaster risk reduction for resilience as well as enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation, and reconstruction at four levels (local, national, regional, and global levels). This framework informed the levels of governance to explore in this research. The fourth target of this framework seeks to “*Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and*

educational facilities, including through developing their resilience by 2030” (United Nations, 2015).

The framework provides a guide to explore the integration of resilience in WASH in HCFs related policies, plans and guidelines. This framework provides a pathway to explore the shared responsibility of reducing disasters among various stakeholders and the nature of their partnerships. Finally, the Sendai Framework guides this research focus on exploring economic and technological disparities in building resilience in WASH in HCFs.

1.4 Research Context

This research was conducted in Kenya. Its population is estimated to be about 48 million currently according to the 2017 Kenya Demographic Profile (Kenya National Bureau of Statistics, 2014). As of 2019, the Gross Domestic Product (GDP) was 95.5 billion USD. The area has two rainy seasons, the long-term rains from April/May to October and the short rains which occur a few weeks between November and December. More than 65 percent of the landmass of Kenya is either arid or semi-arid with little or no rainfall throughout the year (Birch, 2018). The amount of rainfall affects the quantity and quality of water available for use in most marginalized communities. The struggle for access to safe water is worsened in the face of climate variability (Ziervogel et al., 2019). Floods from torrential rains in areas with poor water drainage and effects of drought from prolonged dry seasons have displaced many citizens, especially in rural and marginalized areas. Between 2004 and 2016, Kenya has experienced 7 drought episodes affecting a total population of 22,250,000 people (The World Bank, 2018). There is also the increasing influx of migrants from neighbouring countries greatly affected by drought. Safe water is a scarce commodity however it is often wasted in the value chain of and across sectors due to a range of challenges including water inefficient process, low quality infrastructure, mismanagement and

poor governance (WHO/UNICEF, 2015). Water uses in Kenya include cultural or economic purposes which deal with meeting the society's need for water as well as ecosystem functioning. According to the WHO and UNICEF joint monitoring programme for WASH, as of 2017, 58.9 percent of residents of Kenya have access to at least basic access to drinking water services. Inequalities exist between urban and rural areas. For instance, less than 50 percent of Kenyan residents in rural communities have at least basic access to drinking water. However, 50 percent and 34.6 percent of Kenyan residents in urban areas have access to safely managed and basic water services respectively (WHO/UNICEF, 2017). Access to sanitation facilities is lower as compared to accessing drinking water services in Kenya. Only 29.1 percent of residents of Kenya have at least basic access to sanitary facilities as of 2017. 10.3 percent of the population still practice open defecation (WHO/UNICEF, 2017). This exposes them to high risk of waterborne diseases like bacterial and protozoal diarrhea, hepatitis A, and typhoid fever as well schistosomiasis, a vector borne disease associated with water contact.

At the HCF level in Kenya, insufficient data monitoring affected the coalition of WASH data in HCFs by the WHO and UNICEF joint monitoring programme. For instance, the total number of facilities with drinking water services as of 2018 and 2019 was not adequately measured due to insufficient data. However, 9.8 percent of facilities in Kenya do not have access to drinking water services as of 2019 (WHO/UNICEF, 2019). In rural settings, 60.5 percent of HCFs have basic access to drinking water services. According to the WHO/UNICEF JMP 2015 report, 58 percent of hospitals had access to water compared to 35 percent of primary healthcare centers (WHO/UNICEF, 2015). The level of inequalities in the distribution of WASH services in rural and urban areas as well as hospitals and healthcare centers provide evidence that the level of resilience will be unequal across the country in events of outbreaks and disasters. Healthcare

systems need to be scaled up to strategically handle the burden of both environmental disasters and the outbreak of diseases. The citizens in Kenya are beginning to prioritize and question the quality of healthcare delivery in hospitals without WASH infrastructure (Bisung & Elliott, 2016). Opondo et al. (2009) researched the preparedness of hospitals for newborn survivals by evaluating eight first-referral hospitals in Kenya. Results indicated that the hospitals are ill-prepared and WASH components are inadequate to support safe health care delivery. Similarly, Essendi et al. (2015) explored the infrastructural challenges to better health in maternity facilities in rural Kenya, infrastructure for WASH are issues raised among others as key challenges.

Kenya has a partial plan to support ensuring WASH in health care facilities (WHO/UNICEF, 2015). Even though the standard of living in Kenya is measured by the Gross National Income (GNI) per capita, the country developed a human development approach for advancing human well-being based on three foundations; living a long, healthy and creative life; being knowledgeable and having access to resources needed for a decent standard of living. Through this approach, Kenya adapted the United Nations Development Programme (UNDP) Human Development Index (HDI) to measure advancements in the three areas of focus. Though the HDI does not explicitly mention ensuring WASH in HCFs, some closely associated key indicators include Neonatal Mortality Rate (per 1,000 births), Under 5 Mortality Rate (per 1,000 births), infant mortality rate (per 10000 births) and maternal mortality rate (per 10000 births). This research will contribute significantly to understanding the relevance of WASH in health care facilities in collaboration with relevant WASH, DRR and health actors in Kenya. The linkages between WASH, diseases and health have been extensively researched (Bisung & Elliott, 2017). It is of interest to understand the socio-ecological process shaping access to WASH in healthcare and the need for WASH services in building resilient HCFs.

1.4.1 Kisumu

This research was conducted in Kisumu County, the third-largest County in Kenya. The County lies between longitudes 33° 20'E and 35° 20'E and latitude 0° 20' South and 0° 50' South and has a population of about 1,224,531 people as of 2018 (Kisumu County Government, 2018). Kisumu shares a boundary with Lake Victoria, the second-largest freshwater lake in the world. The County covers approximately 567 km² on water and 2086km² land area, representing 0.36percent of the total land area of Kenya's 580,367km² (Kisumu County Government, 2018). The geology of Kisumu is predominantly black cotton soil which is poorly drained and unstable. The black cotton soils also called expansive soils are clayey in nature with low shear strength, great shrinkage and swelling characteristics. These characteristics makes black cotton soil challenging in infrastructural sustenance. These soils increase the tendency of floods during heavy rainfalls. This soil is rich in lime, iron and magnesium yet low in nitrogen and organic matters.

The main occupation of residents of this county includes farming, fishing, and trade. About 60 percent of the population of residents of Kisumu are employed in the informal sector including trade and agriculture. Kisumu County is rapidly urbanizing. Over 40 percent of the urban population reside in three main informal settlements in Kisumu city. The Kisumu County Government indicated inadequate access to water, sanitation and waste management are critical hindrances to development especially as the population rapidly grows and urbanizes (Kisumu County Government, 2018). The County recognized low investment and expansion of basic services in response to the growing and urbanizing population which is adversely causing environmental degradation as well as poor health choices (Kisumu County Government, 2018). The Kisumu County integrated development plan indicates that only 58 percent of the population have access to water. The County projects an increase in 10 percent coverage by 2022 (Kisumu

County Government, 2018). The sanitation and hygiene situation are no different in the county. The Kisumu County integrated development plan indicates open defecation is still a major challenge and only 30.4 percent of residents in Kisumu County have access to improved sanitation facilities. Inadequate access to WASH services are implicated in the top ten causes of death in Kisumu County.

Kisumu County has 210 registered health facilities and 94 of these facilities are dispensaries. A dispensary provides for the primary health care needs of residents in the community. Other facility types in the County include hospitals, health centers, nursing and maternity homes and clinics. Within these facilities, inadequate staffing is a major challenge across all sectors. For example, the County requires 8230 nurses to ensure the delivery of efficient health care services at public HCFs however, only 878 nurses are at post (Kisumu County Government, 2018). To improve public health and nutrition outcomes for vulnerable groups, Kisumu County has included “number of latrines/toilets facilities constructed in health centres and dispensaries”, number of health care facilities supported to improve infrastructure and healthcare waste treatment system, number of health care waste management central coordinating units established and equipped as key indicators in *Kisumu County Integrated Development Plan 11, 2018-2022*. These key indicators do not comprehensively include all the components of WASH requires for quality care.

1.5 Dissertation Outline

This dissertation is organized as a collection of published manuscripts. Though all the manuscripts together form a conceptual whole, the objectives and methods employed for each paper are unique. Chapter 2 of the thesis provides a detailed description of the research design and methods. Chapter 3 addresses the first research objective and provides the policy context on WASH in healthcare facilities in Kisumu County, Kenya. This information comes on the title page

of the chapter. Chapter 4 addresses the second research objective and explores the psychosocial impacts and coping strategies employed by patients, caregivers, and healthcare workers due to inadequate WASH in HCF. Chapter 5 explores the impacts of the COVID-19 pandemic on the health care system and community residents in Kisumu, Kenya. Chapter 6 summarises the main findings across the three manuscripts and provides a discussion of the broader implications of socio-ecological factors on access to WASH services in HCFs and quality health care services. The chapter also highlights the contributions of the research and concludes with directions for future research. Additional information (e.g. data collection tools) are included in the various appendices.

Chapter 2: Research Design

2.1 Introduction

The goal of this thesis is to explore the factors shaping access to WASH and the role of WASH in building resilient HCFs in Kisumu Kenya, using theories of political ecology of health (PEH). This thesis adopted a qualitative research design (document content analysis, key informant interviews (KIs) and in-depth interviews (IDIs). This chapter of the thesis outlines the details and justification for the research design, methods, and techniques. Some details of the research design are included in the three manuscripts (chapters 3,4 and 5) however, journal restrictions on word limitations prevented the elaboration of the methods employed in this research. The chapter also provides a comprehensive description of the data collection process for the entire research project.

2.2 Approaches to Research in Health Geography

Health geographers have engaged a wide range of theories to guide their research. These theories vary in fundamental assumptions and epistemologies (Gatrell & Elliott, 2015). Through engagement with these approaches, health geographers are able to critically and comprehensively ask questions to obtain the requisite information to understand the complexities underlying health inequalities and behaviour change (Aboud & Singla, 2012; Krieger, 2011) as well as the methods employed in answering research questions (Litva & Eyles, 1995). Secondly, these approaches examine the interrelatedness of the determinants of health and the processes involved in shaping health and wellbeing. These broader questions include how to identify, classify and reduce the risk of environmental and social inequalities and behavioural determinants (Luginaah, 2009).

Within the field of health geography, there are diverse theoretical approaches that researchers have drawn on including positivist, social constructionist, structuralist, structurationist, and post-structuralist to feminist approaches (Gatrell & Elliott, 2015). For instance, structuration

approaches explore how structures shape social practices and action, and vice versa (Gatrell & Elliott, 2015). Structure and agency debates have informed analyses of the experience of health and healthcare in social theory (Kearns, 1993). Structural features are the patterned ways in which social institutions are integrated to make up and stabilize society and agency is the intentional, purposive and meaningful actions a person takes (Gatrell & Elliott, 2015). These actions may not be in a person's choosing due to the influence of social and political structures. For example, understanding the factors that shape access to WASH in HCFs through the experiences and perspectives of research participants can be understood through a structurationist approach. This approach allows for the examination of the broader socio-ecological factors (policies, legislation) as well as gives weight to the perceptions of research participants.

2.3 Research Design

In this research, I employed a qualitative research approach to evaluate how power and politics shape access to WASH in Kisumu Kenya as well as evaluate the role of WASH in building resilient HCFs. Two categories of data were collected to achieve the three objectives of this research. The research was conducted in two phases. In the first phase, I relied on WASH in HCFs documents (policies, legislations, guidelines, plans and monitoring tools) and in-depth and key informant interviews. Objectives 1 (To document the policy context for WASH facilities in HCFs in Kenya) and 2 (To investigate the psychosocial impacts experienced and coping strategies employed by patients, caregivers and healthcare workers due to inadequate WASH in HCFs) were achieved in this phase. The data collection started with desktop reviews to gather relevant documents on WASH in HCFs in Kenya. Concurrently, I designed three interview guides (key informant, health workers and community residents, respectively). Phase 2 of the research design addressed research question 3 (To explore the impacts of the COVID-19 pandemic on WASH services in healthcare

facilities in Kisumu, Kenya). While analysing data from research phase 1, a COVID-19 global pandemic was declared on March 11, 2020. Phase 2 of the research was to engage with the hypothetical and the real on the role of WASH in emergency preparedness in HCFs by captured key informants' reflections during this natural experiment.

The multiple methods employed in the research design across various scales within Kisumu County allow for triangulation, corroboration, and validation of the research findings (Creswell, 2007). Also, conducting follow-up interviews in the second phase with a subset of key informants from the first phase of this research contributes to validation and trustworthiness of the overall research findings. Research methods employed in the first and second phases of the research process enabled the exploration of the different concepts of the theories framing the research. I was able to explore the structures shaping access to WASH as well as the human agency of health care workers and residents of Kisumu. Figure 2.1 below provides a general framework and flow of activities for the data collection and analysis. The rest of this section details the data collection and analysis procedures employed.

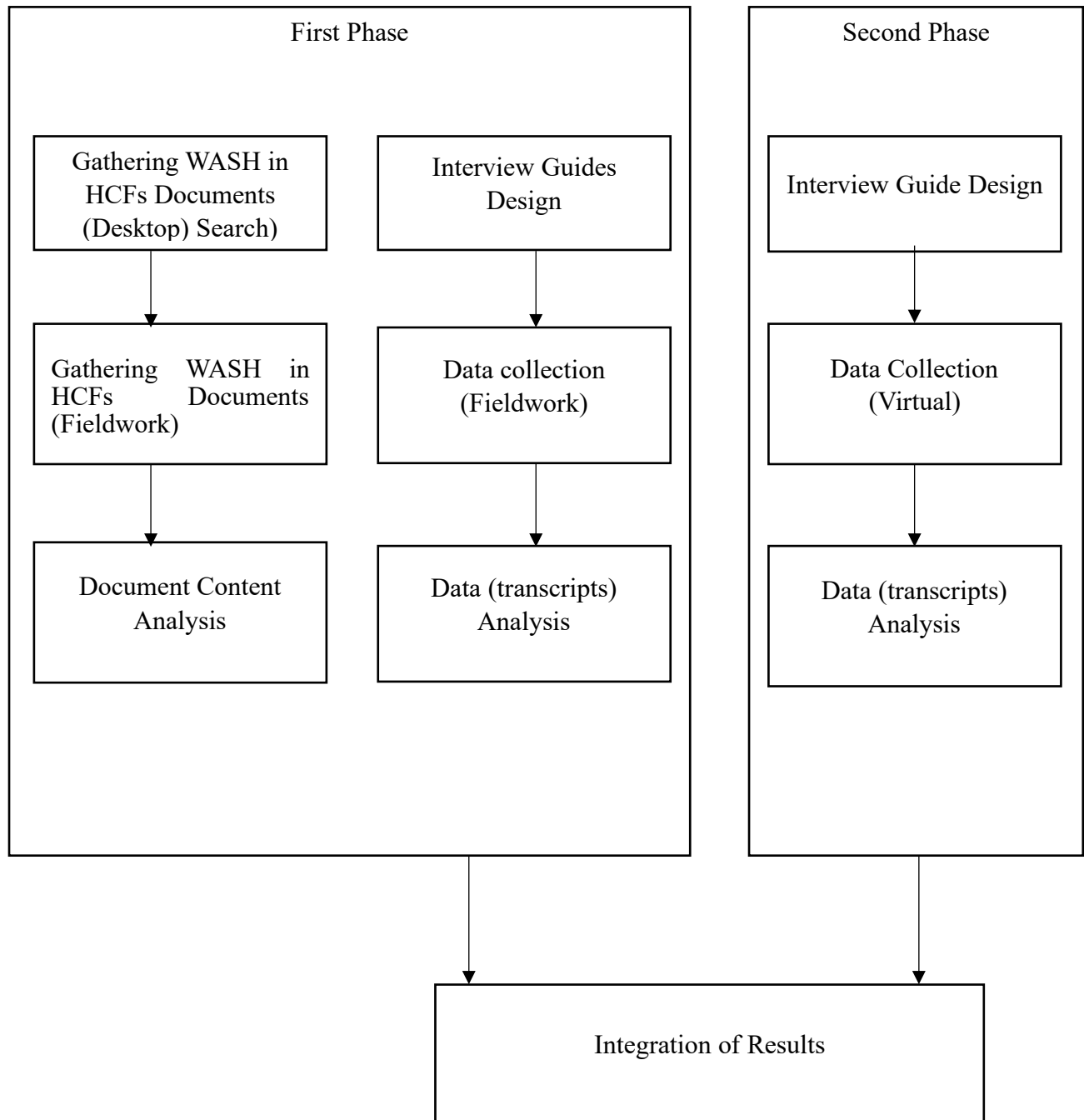


Figure -1: Framework and flow of activities for data collection and analysis

2.3.1 Research Techniques

This research employed both document content analysis and interviews as the two main data collection techniques. Engaging these two techniques promoted a comprehensive understanding of the factors shaping access to WASH in healthcare facilities. In the first phase of this research, two research techniques were used concurrently. The second phase involved only key informant interviews.

The document content analysis component of this research allowed for the understanding of the policy context of WASH in HCFs, identification of relevant stakeholders and processes involved in ensuring WASH in HCFs. The content analysis was conducted at three levels, international, national and county levels. I first engaged in a desktop search to gather relevant regulatory documents. I continued gathering WASH in HCFs documents in person in the field during the first phase of this research. This technique was to enable me to have access to operational WASH in HCFs documents at the County level yet not published on the websites of the relevant organizations. After the first phase, I gathered 17 documents for content analysis. To adequately organize, evaluate and interpret data collected, first, WASH in HCF documents gathered were organized according to levels (international, national and county levels). These documents were further categorized based on type ie whether they are policies, guidelines, legislatures or monitoring tools. I adapted the WASHFIT tool and the policy content analysis framework to develop a coding frame. From this coding frame, I developed a coding schedule. All documents were analyzed deductively. Post coding, I developed a coding book.

The interview component included in-depth interviews and key informant interviews. IDIs and KIs were conducted with adult individuals (18 years+) to develop rich experiences of research participants in order to investigate the socio-political and ecological factors shaping access to

resilient WASH services and infrastructure in health care facilities. With IDIs, I engaged healthcare workers and community members accessing health facilities in research communities. They provided in-depth knowledge on the availability, use and coping strategies in managing WASH in healthcare facilities. Engaging different groups of health care workers also provided rich yet varied and in-depth information on the different aspects of maintaining and managing efficient WASH services. IDIs with health workers also explored the human agency of health care workers as they navigate inadequate access to WASH.

KIs were included in the study because they were considered knowledgeable about WASH in HCFs and were directly involved in the budgeting, funding, and servicing of WASH infrastructure in health care facilities. For this research, key informants included policy implementors at the County government level and representatives of funding organizations commonly referred to Non-Governmental Organisations (NGOs). Key informants provided insights into the challenges and enablers shaping access to WASH in HCFs. They provided rich and in-depth insights into the reasons why inadequate WASH in HCFs exist. They also provide insights on policy discourses on WASH in HCFs. KIs are insightful regarding certain aspects of WASH in HCFs raised during IDIs as well as document content analysis.

All interviews were audio recorded and transcribed verbatim by an undergraduate research assistant to my advisor as well as myself. The transcripts were first read, and theme codes were developed deductively. The deductive coding approach was also informed by the research questions of the research project as well as the theoretical framing and literature. An inductive coding approach was employed which as well determined themes emerging from the data. Data was coded line-by-line to produce textual elements which were organized into themes and sub-themes. All WASH in HCF documents and transcripts were analyzed using NVivo.

2.4 Data Collection

Field data were collected from May 2019 to September 2019 for the first phase as well as August 2020 to September 2020 for the second phase. Prior to field data collection, I engaged in a series of meetings with the Director of my research placement partner. My research placement partner is COHESU, a Kenyan local NGO in Kenya. COHESU engages in research to improve the health and wellbeing of individuals in communities along the Lake Victoria in Kisumu. A collaboration with COHESU will ensure context appropriateness due to their years of experience working in these communities and their understanding of the Kenyan local context. This research placement partner continues to operate numerous health projects including a project on WASH in health care facilities in Kisumu at the time of this research. In spring 2018, the Director of COHESU, my advisor and I met in Kenya to further discuss my interest in WASH in HCFs and the potential roles and responsibilities of a research project. After this meeting, back at the University of Waterloo, I developed a research plan including a research proposal which I shared with the research placement partner for their inputs. The research plan was finalized in Winter 2019 and the Spring of 2019, I arrived in Kisumu for my field research. I engaged with members of staff of COHESU about the research. In the first two weeks, I was assigned a research assistant (RA). My research assistant was a male official of COHESU who was fluent in English, Swahili and Lou. I trained the research assistant on the interview guide and expectations involved in conducting qualitative research. As part of the training sessions, we explored and agreed on the meaning of the interview questions and discuss how to translate the questions into the local dialects to ensure quality and consistency in translation. The RA also signed a confidentiality agreement and I briefed him on the University of Waterloo's research ethics guidelines.

Partnering with the research placement partner, we formally informed the County Ministry of Health about the research project and were granted permission to engage in the research. The research was introduced to community chairpersons and other elders to formally ask for their permission to conduct the study. Following this, the RA and I also visited health care facilities to share introductory letters and inform the facility managers about the research and we began data collection at the HCFs in the following weeks. We began data collection at the facility level to explore the experiences of health care workers and community residents as well as identify relevant questions to include in KI interviews. This approach also helped to identify organizations that assisted in ensuring WASH in HCFs. We scheduled interview dates with health managers to ensure their availability. We conducted interviews in four dispensaries in four communities in Kisumu. The dispensaries were in three rural communities and one informal settlement. We engaged in purposive sampling and at each facility, we interviewed the nurse in charge, a community health volunteer, public health officer, a cleaner, patients and caregivers. Interviews lasted between 30 minutes to 1 hour. A total of 16 healthcare workers were interviewed in four different dispensaries. Also, 31 community residents (patients and caregivers) were interviewed.

My research assistant and I began the distribution of recruitment letters to key informants identified prior to IDIs and during the IDIs in July 2019. Key informant interviews were conducted to understand policy discourses and structural factors shaping access to WASH. The recruitment letters outlined the research objectives, potential risks and benefits, privacy, and confidentiality issues, as well as key contacts for the research project. We ensured to discuss consent, recording, and privacy issues with participants before beginning each interview. The time, location and manner of the interview were determined by participants. Interview meetings were scheduled, and

each lasted between 30 minutes to 2 hours. In total, 13 key informant interviews were purposefully selected from, NGOs and government in Kisumu.

I collected data in the second phase of the research in response to research question three (3). Due to the COVID-19 pandemic restrictions, this time interviews were conducted virtually or over the phone. Recruitment letters were issued to KIs previously engaged in the first round of interviews as well as KIs who were contacted in the previous field visit but could not participate in the research. All interviews lasted between 30minutes to 2hours. All key informant interviews were conducted in English.

Data collection occurred until no new data emerged from the research process and all themes were saturated i.e. when no additional data are being found whereby the researcher can develop new themes (Hay, 2016). I engaged in various activities to enhance rigour in the qualitative techniques employed in this research. Throughout this research, I took field notes on a wide range of topics and documented the research process to enhance transparency. I ensured all participants were adults 18+ years. Also, I purposively sampled research participants at various scales; macro-level (decision-makers), Meso (WASH in HCF managers and users) and micro (community residents accessing HCFs). This approach enabled me triangulated the findings and enhance credibility. A summary of participants is provided in chapters 4 and 5.

This research also employed a snowball sampling approach especially for key informants to ensure a rich and in-depth knowledge of the various aspects of WASH in HCFs. I conducted interviews to a saturation point- where no new themes were emerging within the study context (Morse, 2015). I also engaged in peer debriefing with my research assistant and other officials of my research placement partner, COHESU. Prior to and during each interview, I strived to build rapport with my participants and ensure participants were comfortable throughout the interview to

foster deep conversation and reduce the power dynamics associated with the research process. To ensure consistency interpretation, all interviews were audio recorded, transcribed verbatim and the transcripts were proofread to reduce errors prior to coding.

2.5 Data Analysis

As a health geographer, my methodological approach to this research was framed and influenced by the underpinnings of understanding how social, economic, political, cultural and ecological factors shape health, healthcare and wellbeing. The methodological approaches employed in this research were influenced by Haraway's notion of partial and situated knowledge (Haraway, 1988). Within the research process, the issues of power and privilege in knowledge production among various members of a research team as well as between the research team and participants are almost unavoidable throughout the research process (Wallerstein, 2017). In this research, I sought to address three research questions. Each research question determines the method as suggested by Elliott (1999). I engaged multiple methods and multiple groups of participants implies that different vantage points and techniques "produce different views of particular processes and events" (Nightingale, 2003).

In this research, I recognize I am partially motivated to engage in this topic- access to safe WASH in health care facilities due to the intersection of lived experiences around water and my education and training in Ghana. Prior to my doctoral research work, I engaged in a water security research in Ghana in partial fulfilment of my MPhil research. I also volunteered as a WASH policy advocate with an international organization in Ghana. Throughout my doctoral research processes, these previous experiences could influence what I saw and how I interpreted the Kisumu WASH dynamics. Also, I could not escape the tendency to use the "lens" from my Ghanaian experiences to ask questions, probe further and analyze situations during my fieldwork.

I also recognize my identifiers (being a black and young female) created some form of acceptance as an insider. This created an avenue to easily relate and make connections with research participants and team members. The fact that I am a Ghanaian studying in Canada furthered my position as an outsider in Kenya. However, these two subjects were useful for the research. From this standpoint, it was possible to ask questions that were of practical necessity to the needs of the community and substantively relevant to the research questions.

Chapter 3: Working When It Is Not Measured, How Then Will It Be Planned for? WASH a Critical Indicator for Universal Health Coverage in Kenya

Abu, Thelma Zulfawu, and Susan J. Elliott. "When it is not measured, how then will it be planned for? WASH a critical indicator for universal health coverage in Kenya." *International Journal of Environmental Research and Public Health* 17.16 (2020): 5746.

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Abstract

The quality and safety of healthcare facility (HCF) services are critical to achieving universal health coverage (UHC) and yet the WHO/UNICEF joint monitoring program for water supply, sanitation and hygiene report indicates that only 51% and 23% of HCF in Sub-Saharan Africa have basic access to water and sanitation, respectively. Global commitments on improving access to water, sanitation, hygiene, waste management and environmental cleaning (WASH) in HCF as part of implementing UHC have surged since 2015. Guided by political ecology of health theory, we explored the country level commitment to ensuring access to WASH in HCFs as part of piloting UHC in Kisumu, Kenya. Through content analysis, 17 relevant policy documents were systematically reviewed using NVIVO. None of the national documents mentioned all the component of WASH in healthcare facilities. Furthermore, these WASH components are not measured as part of the universal health coverage pilot. Comprehensively incorporating WASH measurement and monitoring in HCFs in the context of UHC policies creates a foundation for achieving SDG 6.

Keywords: WASH; universal health coverage; quality care; healthcare facility; LMICs

3.1 Introduction

Accessing quality health services is a challenge, especially in the global south. Lack of access to water, sanitation, hygiene, waste management and environment cleaning (WASH) undermine the quality of services provided in healthcare facilities (Cronk & Bartram, 2018; WHO and UNICEF, 2019). The absence or inadequacy of safe WASH in healthcare facilities compromises infection prevention and control, patient safety and child and maternal health (Maina et al., 2019). Meanwhile, the WHO/UNICEF joint monitoring program for water supply, sanitation and hygiene reported that in Sub-Saharan Africa (SSA), only 51 percent of healthcare facilities have access to basic water services and 23 percent have access to basic sanitation services. Forty-one percent of healthcare facilities have basic waste management services. Data on hygiene and environmental cleaning in healthcare facilities were inconclusive due to inadequate monitoring (WHO and UNICEF, 2019). Similarly, Cronk and Bartram (2018) evaluated the environmental conditions of healthcare facilities in 78 low- and middle-income countries (LMICs) and found that only two percent of the healthcare facilities provided water, sanitation, hygiene, and waste management services. Also, ensuring access to WASH in healthcare facilities extends beyond disease control to issues of dignity and respect. For example, women after childbirth in healthcare facilities require a clean bathroom with running water to maintain their personal hygiene. Kohler et al. (2017) in a comparative study in India and Uganda sought to address the gender gap in access to WASH in healthcare facilities. They undertook a needs assessment in hygiene and sanitation issues during menstruation and childbirth among women in selected maternal ward and inpatient facilities which were run by government. WASH in healthcare facilities were assessed based on hygiene and health, security and safety, privacy, accessibility, comfort, and menstrual hygiene management. From their study, lack of safe WASH infrastructure and menstrual hygiene facilities were a burden for women in both countries. In addition, Gon et al. in 2016 engaged in a study to

investigate the status of water and sanitation in relation to childbirth in healthcare facilities and homes. From their study, less than 50 percent of all delivery facilities and homes had access to WASH in all countries (Gon et al., 2016). For example, in Kenya, 18 percent of women delivered with improved access to water and sanitation. Furthermore, climate change and variability and conflicts burden the functioning of WASH in healthcare facilities. First, 90 percent of disasters in SSA, especially the horn of Africa, are water-related (International Monetary Fund, 2016). Prolonged drought and floods have affected the quantity and quality of water available (Hutchings et al., 2017; Valois et al., 2018). Second, displaced people face WASH related challenges and these events increase health risks and disease outbreaks such as cholera (UNOCHA, 2017; WHO/UNICEF, 2015).

Prior global commitments on ensuring access to WASH were concentrated at the household level to the neglect of institutions. The widespread effects of Ebola in 2014 even in healthcare facilities leading to the loss of several healthcare workers (Kieny et al., 2014 ;Meyer et al., 2018; Shoman et al., 2017) and the subsequent World Health Organization assessment on WASH in healthcare facilities in 2015 initiated discussions and led to several global commitments to address this challenge of infection prevention and control in healthcare facilities. At the global stage currently, significant efforts towards ensuring access to WASH have included and prioritized public spaces such as healthcare facilities. This is included in the sustainable development goals (SDG). Goal 6 seeks to ensure access to water and sanitation. Targets 6.1 and 6.2 of the SDGs highlight the need to expand WASH monitoring by relevant stakeholders in non-household settings, such as healthcare facilities. Similarly, Goal 3 seeks to ensure healthy lives and promote wellbeing for all at all ages. Target 3.8 highlights achieving universal health coverage which does not just incorporate reducing the financial burden of people, but further ensuring quality essential

healthcare services for all. Similarly, in 2015, world leaders adopted the Sendai framework for disaster risk reduction (DRR) and one of its targets is to substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health facilities through developing their resilience by 2030 (United Nations, 2015). This framework was a paradigm shift from managing disasters to disaster risk reduction. Achieving this target means ensuring the effectiveness and efficiency of all the components of a health system, including WASH. In March 2018, as part of the launch of International Decade for Action “Water for Sustainable Development 2018–2028”, the UN Secretary General also made a global call to action for WASH in all healthcare facilities (World Health Organization, 2019). In response, various ministers of state signed the World Health Assembly resolution on WASH in healthcare facilities as part of the implementation of universal health coverage scheme. In addition, various assessment tools, healthcare facility guidelines and frameworks on WASH were published by the global community especially World Health Organization. However, it is evident from research that socially and institutionally driven challenges such as lack of data and knowledge are major hindrances to improved service provision such as healthcare in SSA (Elliott, 2017; Rosenberg, 2017; WHO/UNICEF, 2015). For instance, Adjei et al. (2019) explored historical and emerging policies and institutional arrangements surrounding urban water supply in Sub-Saharan Africa. The persistent inadequacy of water in urban areas was attributed to weak institutional arrangements and poor enforcement of legislations. The authors recommended the need for institutional rectification to achieve the sustainable development goals by 2030. Similarly, Maina et al. (2019) in their study on the role of WASH on antimicrobial resistance in healthcare facilities in Kenya highlighted the need for government institutional support for healthcare managers to enable them achieve access to basic WASH in healthcare facilities. It is evident from research that the

availability and enforcement of regulations such as policies and legislation on an agenda enhance their achievement (Asiki et al., 2018). Guo & Bartram (2019) in their investigation on the predictors for water quality in rural healthcare facilities concluded that the presence of a protocol for operation and management in a health facility was associated with safe water use. Following this, there is little research to understand the implementation process or the institutional arrangements of WASH in healthcare facilities and the influence of global commitments on country level policy environment on ensuring access to WASH in health facilities in SSA. Therefore, this paper reviews the framing of WASH in healthcare facilities in relevant global and country—level institutional documents (policies, legislations, guides, plans and monitoring tools) using Kenya as a case study. Following the introduction, the second section explores the theoretical framing of this paper, the political ecology of health theory. The third section explores the study context, Kenya. The fourth section indicates the methods of data collection and analyses. The presentation of the results and discussion make up the fifth and sixth sections, respectively. The seventh section concludes the paper with a summary of the key points and emphasizing the relevance of WASH in healthcare facilities to SDG 3 and SDG 6.

3.2 Theoretical Framework

Social theories provide a more comprehensive connection between determinants and processes of health and wellbeing (Aboud & Singla, 2012; Gatrell & Elliott, 2015; Krieger, 2012). The paper is guided by political ecology of health theory, which explores how power, politics, structures, agendas and/or agents shape the environment and health risks of populations (King, 2010; Mayer, 1996). This theory further explores how growing discourse on health at the global scale influence and shape local contexts such as policies development and implementation. The prioritization, implementation and management of WASH interventions are political and power

laden at the global, national and local levels (Bisung et al., 2018). This theory has been useful in the study of prioritization and implementation of development projects and health and wellbeing of local populations (Bisung, et al., 2016; Mulligan et al., 2012; Richmond et al., 2005). It has also guided studies in healthcare services in LMICs (King, 2010) and privatization of water and its impacts on health and wellbeing (Bisung, et al., 2016).

3.3 Study Context

Kenya is an East African country with an estimated population of about 48 million (Kenya National Bureau of Statistics, 2014). The country has 47 counties. According to the Kenyan health policy 2012–2030, Kenya has an agenda to implement universal health coverage and achieve countrywide coverage by 2022. In 2018, the universal health coverage scheme was launched and currently piloted in four counties, Kisumu, Isiolo, Machakos and Nyeri. A policy brief written by (Wangia & Kandie, n.d.) and published by the ministry of health with a focus on quality of care and essential elements in attaining universal health coverage in Kenya indicated the need for appropriate water and sanitation infrastructure in healthcare facilities. According to the WHO/UNICEF joint monitoring program for water supply, sanitation and hygiene report based on 2016 data, only 65% of healthcare facilities in Kenya had access to basic water services. This served a population of 31,784,828 people. Healthcare facilities with limited and no water services were 17.6 percent and 16.8 percent, respectively. Concerning sanitation in healthcare facilities, monitoring and data collection was inadequate. Eighty-six percent of healthcare facilities had insufficient data and 14 percent of healthcare facilities recorded no sanitation services. Regarding hygiene, insufficient data for 99.6 percent of healthcare facilities was recorded. In addition, 0.4 percent of the healthcare facilities recorded no hygiene services. Only 33.1 percent of healthcare facilities recorded basic waste management services, 62.1 percent recorded limited services and

4.8 percent reported no waste management services. For environmental cleaning in healthcare facilities data were insufficient for comprehensive and conclusive analysis. From these data it is evident that access, regular monitoring and evaluation of WASH in healthcare facilities are major challenges. Other researchers such as Bennett et al. (2015); Essendi et al. (2015); Maina et al. (2019) have reported inadequate of WASH in healthcare facilities in Kenya in their studies. In addition, at the community level, residents questioned the quality of healthcare delivery in hospitals without the appropriate WASH infrastructure (Bisung & Elliott, 2016; Hodes et al., 2018). According to Wangia & Kandie (n.d), quality care is not yet a legal requirement and issues such as poor enforcement of legislation and minimal information on quality of care especially in private facilities will negatively impact achieving universal health coverage. Other key challenge to accessing WASH in healthcare facilities are climate variability and civil disruptions. The amount of rainfall affects the quantity and quality of water available for use in most marginalized communities. The struggle to access safe water is worsened in the face of climate variability. Floods from torrential rains and effects of drought from prolonged dry seasons have displaced many citizens, especially in rural and marginalized areas. As of September 2017, about 5.6 million Kenyan citizens were in need due to several episodes of drought (Valois et al., 2018). Kenya has also recorded an increasing influx of migrants from neighboring countries greatly affected by drought. These people are further exposed to health hazards subsequently increase attendance at healthcare facilities. Kenya has a partial plan to support ensuring access to WASH in health care facilities (WHO/UNICEF, 2015). Despite progress and new initiatives, more needs to be done to understand and solve the challenge of lack of WASH in healthcare facilities.

3.4 Methods

Qualitative content analysis was used to analyze the framing of WASH in healthcare facilities in relevant documents for this paper. Relevant WASH in healthcare facility documents such as policies, legislations, guidelines, plans and monitoring tools were gathered for this research from May 2019 to June 2020. Documents included in this research were accessed using two methods. First, desktop searches were conducted to identify and access current and operational WASH in healthcare facility documents. Desktop searches on key phrases like “WASH in healthcare facilities”, “quality care” and “universal health coverage” were done using google and google scholar. The websites of the Ministry of Health, Kenya, World Health Organization, WHO/UNICEF joint monitoring program for water supply, sanitation and hygiene as well as the official website for WASH in healthcare facilities were searched for relevant documents.

Second, the Ministry of Health, Kisumu County office, Kenya was contacted in person by researchers from June 2019–September 2019 for relevant documents on WASH in healthcare facilities. Current operational documents guiding the implementation and monitoring of WASH in healthcare facilities, quality healthcare and the piloted universal health coverage as of September 2019 were sought at the ministry. Documents included in this study were based on three criteria after been carefully screened. First documents comprehensively indicated WASH in healthcare facilities or/and health care (quality care and universal health coverage) as their focus. Second, current and operational national documents with an agenda on WASH in healthcare facilities, quality care in healthcare facilities and universal health coverage were also considered. Third, documents were listed by relevant key stakeholders identified and interviewed at the Ministry of Health, Kisumu County office. The documents included in this study were published from 2007 to 2019. Documents prior to 2015 when the upsurge in campaigns for WASH in HCFs and UHC

were included because they set the foundation for drafting current WASH in HCF guidelines and policies. Table 3.1 shows a list of relevant documents included in this research. First, the documents were categorized based on scale—global and national. Second, based on the purpose of the document—legislation, policy, guidelines, monitoring tool and plans. In total, 17 documents were included, five (5) global level documents and eight (12) national level documents regulating issues of WASH in healthcare facilities. Two of the twelve national documents are county level documents. Kenya has a decentralized government system, and the counties have the power to contextualize national policies or develop policies that meet their needs.

Table 3:1 List of Documents Included in this Research

Document Title	Author	Scale	Type	Year	No. of Pages
Water, sanitation and hygiene in health care facilities (WaSH in healthcare resolutions)	WHO/World Health Assembly	Global	World Health Assembly Resolution	2019	5 pages
Essential environmental health standards in health care	WHO	Global	Guideline	2008	59 pages
Water and Sanitation for Health Facility Improvement Tool (WASH FIT), a practical guide for improving quality of care through water, sanitation and hygiene in health care facilities	WHO	Global	Guideline	2017	92 pages
Water, Sanitation, and hygiene in health care facilities, practical steps to achieve universal access to quality care	WHO/UNICEF	Global	Guideline	2019	70 pages
Core questions and indicators for monitoring WASH in health care facilities in the Sustainable Development Goals	WHO/UNICEF	Global	Monitoring tool	2018	28 pages
Laws of Kenya, The constitution of Kenya	National Council for Law Reporting with the Authority of the Attorney General	National		2010	194 pages
The Health Act No. 21 of 2017	Republic of Kenya	National	Act	2017	72 pages
Kenya health policy (2013-2030)	Ministry of Health, Republic of Kenya	National	Legislation	2013-2030	87 pages
Planning, Budgeting and Performance Review Process Guide for Health Sector (Simple Guide to MTEF for Health Sector)	Ministry of Health, Republic of Kenya	National	Guide	2019	41 pages
Public Health Act (Chapter 242)	National Council for Law Reporting with the Authority of the Attorney-General	National	Act	Revised Edition 2012	71 pages

Kenya Vision 2030 (The popular version)	Ministry of State for planning, Republic of Kenya	National	Strategic plan	2007	32 pages
Water Act, Chapter 372	Ministry of Water and Irrigation	National	Act	Revised Edition 2012 (2002)	245 pages
National Infection Prevention and Control Guidelines for Health Care Services in Kenya	Ministry of Public Health Ministry of Medical Services	National	Guideline	2010	210 pages
Kenya Environmental Sanitation and Hygiene policy	Ministry of Health, Republic of Kenya	National	Policy	2016-2030	
Building Code	The local government (adoptive by-laws) (building) order 1968	National	Legislation		138 pages
Health and Nutrition Sector Contingency Plan	Ministry of Health	County	Plan	2019	38 pages
Universal Health Coverage Level 2 & 3 Final Supervision tool	Ministry of Health	County	Monitoring tool	2019	13 pages

3.4.1. Coding Frame

A coding frame (Table 3.2) was developed to guide the coding process. The frame was guided by a logical framework (input, activities, output, and impact), heuristic framework (agenda setting, formulation, implementation and evaluation) (Walt et al., 2008) and policy triangle (grounded in a political economy perspective and considers actors, context, process and content shape policymaking) (Walt & Gilson, 1994). The authors adapted the WASHFIT conceptual framework (Maina et al., 2019; Weber et al., 2019). It is a framework designed to help implementers identify risks in healthcare facilities and it provides practical tools and templates for managing WASH and facilities. Themes developed for coding were first guided by the water–health nexus. Cook & Bakker (2012) define water security as “sustainable access on a watershed basis to adequate quantities of water, of acceptable quality, to ensure human and ecosystem health”. This definition embodies two SDGs, SDG 3—good health and wellbeing, of particular interest to this research is target 3.8 (Achieve universal health coverage, including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality, and affordable essential medicines and vaccines for all) and SDG 6, clean water, and sanitation for all. In addition, the key components of WASH—water, sanitation, hygiene, waste management and environmental cleaning were adapted from the WHO/UNICEF joint monitoring program for water supply, sanitation, and hygiene. Key indicators for monitoring WASH in healthcare facilities and categorized as improved, basic, limited and no service (WHO and UNICEF, 2019). Guided by this coding frame, a coding schedule (Tables 3.3-3.5) was developed for coding. Tables 3.3 and 3.4 show the number of coded themes for each WASH documents included in this study. Content analysis was done deductively using NVIVO 12. Key phrases like WASH in healthcare facilities, universal health coverage, WASH in healthcare facility stakeholders and quality care were coded.

Table 3:2: Coding Framework

Input	Activities	Output	Impact
Political commitment to WASH in HCF	Political will	WASH Infrastructure. (access, quantity, quality, safety, functionality, usable, cleanliness)	Health improvements
	Types of regulatory documents implemented		Quality of care (Universal health coverage)
Financial Commitment to WASH in HCF	Financial responsibility	Improved, basic, limited and no access of: Water Sanitation Hygiene Waste management Environmental cleaning	Community improvement
	Categories of items to purchase		Emergency Preparedness and resilience improvement
	Financial allocation to upgrade/improve WASH infrastructure		
	WASH personnel		
	HCF staff training		
Leadership	Incremental improved plan developed	Natural disruptions	
Human Resource	Community participation	Healthcare facility type: Level 1,2,3	Civil disruptions
	Health committee		
	Stakeholder engagement		

Table 3:3: Filled coding schedule for the global level documents.

Code/Document	Description of code	WASH in Healthcare Resolutions	Essential Environmental health standards in healthcare	WASHFIT, a practical guide for improving quality of care through WASH in healthcare facilities	WASH in healthcare facilities, practical steps to achieve universal access to quality care	Core questions and indicators for monitoring WASH in healthcare facilities in the SDGs
Water	Availability of water / types of water sources in a healthcare facility	1	41	21	6	12
Sanitation	Presence/types of sanitation facilities in the healthcare facility		23	10	1	11
Hygiene	Presence/types of hygiene facilities in the healthcare facility	2	40	13	20	11
Waste management	Presence/types of waste management facilities in the healthcare facility		31	22	26	7
Environmental cleaning	State of cleanliness of the healthcare facility compound		9	7	6	11
Safe environment	General Safety	1	14	2	3	1
	Health workers Safety	2	1	1	2	
	Patient Safety	2	1	1	3	
WASH	Water, sanitation, hygiene, waste management and	20	19	37	142	20

	environmental cleaning of a healthcare facility					
Healthcare facilities	Healthcare settings, facility, hospital, etc	1	47	25	40	13
Natural disruptions on WASH in healthcare facilities	Floods, drought effects on WASH in health facilities	2	1	3	1	
Civil disruptions impact on WASH in healthcare facilities	Conflicts on WASH in healthcare facilities					
Disaster risk reduction in health care facilities	Measures in place towards building resilience	1	6	3	3	
WASH and Healthcare Stakeholder Engagement	Planning, Budgeting and implementing WASH in healthcare facilities of relevant stakeholders	5	29	57	39	6
Disease prevention and control in health care facilities	Disease prevention in healthcare facilities	1	26		1	
Infection control in healthcare facilities		15	34	13	19	8
Universal Health Coverage		4	11	1		2

Table 3:4: Filled coding schedule for national level documents

Code/Document	Description of code	Laws of Kenya, The Constitution of Kenya	The Health Act No.21 of 2017	Kenya Health Policy (2030)	Planning, Budgeting and Performance Review Process guide for health sector (Simple guide to MTEF for Health Sector)	Public Health Act (Chapter 242)	Kenya Vision 2030 (The popular version)	Water Act (Chapter 372)	Universal health coverage level 2 and 3, Final supervision tool
Water	Availability of water / types of water sources in a healthcare facility	1						1	2
Sanitation	Presence/types of sanitation facilities in the healthcare facility		1						
Hygiene	Presence/types of hygiene facilities in the healthcare facility		2						1
Waste management	Presence/types of waste management facilities in the healthcare facility		2	2					4
Environmental cleaning	State of cleanliness of the healthcare facility compound	1							

Safe environment	General Safety			1					
	Health workers Safety		1	1					
	Patient Safety			2					
WASH	Water, sanitation, hygiene, waste management and environmental cleaning of a healthcare facility								
Healthcare facilities	Healthcare settings, facility, hospital, etc	3	29	15	15	6	1		3
Natural disruptions on WASH in healthcare facilities	Floods, drought effects on WASH in health facilities					1			
Civil disruptions impacts on WASH in healthcare facilities	Conflicts on WASH in healthcare facilities			1					
Disaster risk reduction in health care facilities	Measures in place towards building resilience	2	1	3			1		
WASH and Healthcare	Planning, Budgeting and implementing			3					

Stakeholder Engagement	WASH in healthcare facilities of relevant stakeholders					
Disease prevention and control in health care facilities	Disease prevention in healthcare facilities		5		3	
Infection control in healthcare facilities		1	1		9	
Universal Health Coverage		2	6	2	2	5

Table 3:5: Filled coding schedule for national level documents (continued)

Code/Document	Description of code	National Infection Prevention and Control Guidelines for Health,2010 Care Services in Kenya	Kenya Environmental Sanitation and Hygiene policy 2016-2030	Building Code	Health and Nutrition Contingency Plan, 2019
Water	Availability of water / types of water sources in a healthcare facility	9			
Sanitation	Presence/types of sanitation facilities in the healthcare facility	2		1	
Hygiene	Presence/types of hygiene facilities in the healthcare facility	24			
Waste management	Presence/types of waste management facilities in the healthcare facility	25	29		
Environmental cleaning	State of cleanliness of the healthcare facility compound	9			
Safe environment	General Safety	2	1		
	Health workers Safety	11	1		
	Patient Safety	3			
WASH	Water, sanitation, hygiene, waste management and environmental cleaning of a healthcare facility	2	5		

Healthcare facilities	Healthcare settings, facility, hospital, etc			
Natural disruptions on WASH in healthcare facilities	Floods, drought effects on WASH in health facilities			8
Civil disruptions impacts on WASH in healthcare facilities	Conflicts on WASH in healthcare facilities		2	
Disaster risk reduction in health care facilities	Measures in place towards building resilience			
WASH and Healthcare Stakeholder Engagement	Planning, Budgeting and implementing WASH in healthcare facilities of relevant stakeholders	3	12	2
Disease prevention and control in health care facilities	Disease prevention in healthcare facilities	2		
Infection control in healthcare facilities		56	2	
Universal Health Coverage				

3.5 Results

This research explored the framing of WASH in healthcare facilities in relevant global and national policies, guidelines, monitoring tools and legislations. From the content analysis, five (5) global documents comprehensively mentioned WASH in healthcare facilities. Two national level documents mentioned water, sanitation and hygiene in phrases or sentences while environmental cleaning and waste management were excluded.

“The core indicators define “basic” service levels for water, sanitation, hygiene, health care waste management and environmental cleaning in health care facilities” (Core questions and indicators for monitoring WASH in health care facilities in the Sustainable Development Goals).

The need to ensuring access to water, sanitation and hygiene in health care facilities was mentioned:

“Ensure that all new health facilities are appropriately designed and constructed with reliable water supply and environmental sanitation and hygiene facilities, including toilet and hand-washing facilities, taking into account gender, age and disability considerations” (Kenya Environmental Sanitation and Hygiene policy 2016–2030).

“Facility design and planning should ensure the following: Adequate supply of safe water, Adequate floor space for beds, Adequate space between beds, Adequate hand-washing facilities, adequate sanitary facilities” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya, 2010).

3.5. 1 Global WASH in Healthcare Facility Documents Serve as Guides for National Implementation

The global documents serve as a guide for national WASH in healthcare facility implementation. They also specify the core areas of WASH in healthcare facilities that need facility managers and implementers attention:

“to develop and implement a road map according to national context so that every healthcare facility in every setting has, commensurate with its needs: safely managed and reliable water supplies; sufficient, safely managed and accessible toilets or latrines for patients, caregivers and staff of all sexes, ages and abilities; appropriate core components of infection prevention and control programmes, including good hand hygiene infrastructure and practices; routine, effective cleaning; safe waste management systems, including those for excreta and medical waste disposal; and, whenever possible, sustainable and clean energy” (A72_R7WaSH in Healthcare Facilities Resolutions).

The global WASH in healthcare facilities documents also set a monitoring standard for countries given in-country monitoring indicators on WASH in healthcare facilities are often not comprehensive:

“In support of SDG monitoring and to allow for comparable data to be generated within and between countries, a core set of harmonized indicators and questions that address basic WASH services in health care facilities that will be applicable in all contexts is needed” (Core Questions for monitoring WASH in healthcare facilities in the Sustainable Development Goals).

The individual components of WASH were highlighted in the documents assessed. The various components are outlined below.

3.5.1.1 Water

Recommended water sources for healthcare facilities include piped water, boreholes or tube wells, protected dug wells, protected springs, rainwater and packaged or delivered water. The theme water in healthcare facilities was mentioned in nine (9) documents of which four were national documents. Some documents highlighted the need for water in healthcare facilities:

“Sufficient water-collection points and water-use facilities are available in the health center to allow convenient access to, and use of, water for drinking, food preparation, personal hygiene, medical activities, laundry and cleaning” (Essential Environmental Health Standards in Healthcare).

The types of water systems in healthcare facilities were also mentioned in some documents:

“Improved water sources in healthcare settings include piped water, boreholes/tube wells, protected wells, protected springs, rainwater and packaged or delivered water” (WASHFIT, A practical guide for improving quality of care through WASH in HCFs).

At the national level, the Water Act mentions the provision of water in healthcare facilities:

“Nothing in this section prohibits—(a) the provision of water services by a person to his employees; or (b) the provision of water services on the premises of any hospital, factory, school, hotel, brewery, research station or institution to the occupants thereof, in cases where the source of supply of the water is lawfully under its control or where the water is supplied to it in bulk by a licensee” (Water Act Cap 372).

3.5.1.2 Sanitation

Recommended sanitation infrastructure includes flush/pour flush to piped sewer system, septic tanks, or pit latrines; ventilated improved pit latrines, composting toilets, or pit latrines with slabs. Sanitation in healthcare facilities was highlighted in five (5) global documents and three (3) national documents. Basic sanitation service was defined as follows:

“Basic sanitation services definition: Proportion of health care facilities with improved and usable sanitation facilities, with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for users with limited mobility” (Core questions in monitoring WASH in healthcare facilities in the Sustainable Development Goals).

The maintenance of sanitary infrastructure was highlighted.

“Ensuring houses, institutions, hospitals and other public places maintain environment to the highest level of sanitation attainable to prevent, reduce or eliminate environmental health risks” (Kenya Health Act No.21 of 2017).

3.5.1.3 Hygiene

Hygiene infrastructure include sink with tap, water tank with tap, bucket with tap or similar device, alcohol-based hand rub dispensers. Hygiene in healthcare facilities was highlighted in eight documents analyzed. Three (3) national level documents and five (5) global documents. Hygiene was defined as:

“Basic hygiene services Definition: Proportion of health care facilities with functional hand hygiene facilities available at one or more points of care and within 5 meters of toilets” (Core questions for monitoring WASH in healthcare facilities in the Sustainable Development Goals).

The importance of hygiene facilities was also highlighted in some documents, for example:

“Hand hygiene is the single most important IPC precaution and one of the most effective means to prevent transmission of pathogens associated with health care services. Appropriate hand hygiene must be carried out upon arriving at and before leaving the health care facility, as well as in the following circumstances” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya).

3.5.1.4 Waste Management

Waste management in healthcare facilities was highlighted in nine (9) documents. Different types of waste are generated from various sectors of the healthcare facility as a result waste segregation was highly illustrated in the documents:

“The four major categories of health-care waste recommended for organizing segregation and separate storage, collection and disposal are: _ sharps (needles, scalpels, etc.), which may be infectious or not _ non-sharps infectious waste (anatomical waste, pathological waste, dressings, used syringes, used single-use gloves)_ non-sharps non-infectious waste (paper, packaging, etc.)_ hazardous waste (expired drugs, laboratory reagents, radioactive waste, insecticides, etc.)” (Essential Environmental Health Standards in Healthcare).

It is recommended colors and images be used to identify waste containers and waste should be appropriately disposed by incineration, autoclaving and burial in a lined, protected pit.

The repercussions of improper healthcare waste management were mention.

“Review medical waste management guidelines for health care facilities to protect public health and safety, provide a safer working environment, minimize waste generation and environmental impacts of medical waste disposal and ensure compliance with legislative and regulatory requirements” (Kenya Environmental Sanitation and Hygiene Policy 2016–2030).

2.5.1.1 Environmental Cleaning

Basic environmental cleaning in a healthcare facility was defined as:

“Definition: Proportion of health care facilities which have protocols for cleaning, and staff with cleaning responsibilities have all received training on cleaning procedures” (Core Questions for monitoring WASH in healthcare facilities in the SDG).

“Housekeeping refers to the general cleaning of hospitals and clinics, including the floors, walls, certain types of equipment, furniture, and other surfaces. Cleaning entails removing dust, soil, and contaminants on environmental surfaces. Cleaning helps eliminate microorganisms that could come in contact with patients, visitors, staff, and the community; and it ensures a clean and healthy hospital environment for patients and staff.” (National Infection and Prevention and Control Guidelines for Health Care Services, 2010).

Environmental cleaning is a major challenge due to financial constraints:

“As a result, health facilities often lack funds for capital infrastructure investments and ongoing operation and maintenance as well as for overlooked functions such as cleaning and waste management” (WASH in HCF, Practical Steps to Achieving Quality Care).

The constitution of Kenya indicted the right to a clean environment by all citizens but does not specifically address healthcare facilities.

“Every person has the right to a clean and healthy environment, which includes the right—f(a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69” (Kenya Constitution).

3.5.2 WASH in Healthcare Facilities and Universal Health Coverage

The importance of WASH in connection to achieving SDG3 was highlighted in some of the documents:

“Noting that without sufficient and safe water, sanitation and hygiene services in health care facilities, countries will not achieve the targets set out in Sustainable Development Goal 3” (A72_R7 WASH in Healthcare Facilities Resolutions).

Specifically, the role of WASH in healthcare facilities in achieving quality care as part of the implementing and achieving universal health coverage was mentioned.

“In addition, WASH in HCF is important for meeting several targets under SDG 3 (health for all) and in particular target 3.8 on universal health coverage” (Core Questions for monitoring WASH in healthcare facilities in the Sustainable Development Goals).

Universal health coverage was framed to include both financial and quality care.

“Universal health coverage (UHC) means that all individuals and communities receive the health services they need without suffering financial hardship. It includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care” (WASH in HCF, Practical Steps to Achieving Quality Care).

However, the national level documents did not mention universal health coverage in line with WASH in healthcare facilities, but did associate UHC with quality care:

“Other projects include digitization of records and health information system; accelerating the process of equipping of health facilities including infrastructure development; human resources for health development; and initiating mechanisms towards universal health coverage” (Kenya Health Policy 2014–2030).

“The goal of devolution in health is to enhance equity in resource allocation and enhance access to essential services by accelerating Universal Health Coverage (UHC) and improving quality service delivery for all Kenyans, especially those who need it most” (Planning, Budgeting Performing, Review Process Guide for Health Sector).

The national monitoring tool focused on the registration process of citizens for the UHC and the frequency of visits by patients to a healthcare facility:

“What mechanisms are in place to identify those registered for UHC” (Final UHC Level 2 and 3 Final Supervision Tool).

3.5.3 WASH in Healthcare Facilities and Infection Control

Access and functionality of WASH in healthcare facilities were associated with infection control in healthcare facilities and beyond:

“Recalling WHA68.7 (2015) on the global action plan on antimicrobial resistance, which underscores the critical importance of safe water, sanitation and hygiene services in community and health care settings for

better hygiene and infection prevention measures to limit the development and spread of antimicrobial-resistant infections and to limit the inappropriate use of antimicrobial medicines, ensuring good stewardship” (A72_R7WaSH in Healthcare Facilities Resolutions).

Infection prevention and control in healthcare facilities was defined as:

“Infection prevention and control (IPC) is broadly defined as the scientific approaches and practical solutions designed to prevent harm caused by infection to patients and health workers associated with delivery of health care” (WASH in HCF, Practical Steps to Achieving Quality Care).

Kenya has a guide on healthcare infection prevention and prevention:

“These guidelines are intended to provide administrators and HCWs with the necessary information and procedures to implement IPC core activities effectively within their work environment in order to protect themselves and others from the transmission of infections” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya, 2010).

Infection control in healthcare facilities was also associated with waste management:

“Strengthening infection prevention and control systems including health care waste management in all health facilities” (Kenya Health Act.21 of 2017).

3.5.4 WASH in Healthcare Facilities and Safety

WASH, infection control and prevention were also associated with the safety of the public, patients, caregivers, and healthcare workers:

“Every patient and every family member and facility staff who cares for them deserves a clean and safe health care environment with high quality water, sanitation, and hygiene services” (WASH in HCF, Practical Steps to Achieving Quality Care).

Aside focusing on the safety of all who visit health care facilities, some of the documents also highlighted the safety of healthcare workers:

“Strategies to protect health workers include the following: Implementing standard precautions, Immunizing all health workers against HBV, especially those working in health care settings, Providing PPE, managing exposures in a timely manner, Eliminating unnecessary sharps and injections Successful implementation of these strategies requires an effective quality improvement or infection prevention and control committee (IPCC) with support from the hospital management team” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya).

Some national documents highlight the provision of safe healthcare facilities, but did not link safety to WASH nor explain what a safe working environment entail:

“The right to a safe working environment that minimizes the risk of disease transmission and injury or damage to the health care personnel or to their clients, families or property” (Kenya Health Act No.21 of 2017).

3.5.5 Civil Disruptions and Climate Change Impacts on WASH in healthcare facilities

The functionality of WASH in healthcare facilities is impacted by climate change or weather patterns or civil disruptions. In the context of the national documents, the increased burden on healthcare facilities was highlighted:

“Political instability in the Eastern Africa region and the subsequent in-migration of refugees into Kenya has the result of increasing the demand for health services in the country and raising the risk of spreading communicable diseases” (Kenya Health Policy 2014–2030).

The need to appropriately site infrastructure was mentioned:

“The site should have proper drainage, be located downhill from any wells, free of standing water, and not be in a flood-prone area. The site should not be located on land that will be used for agriculture or development” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya).

The impact of climate change was highlighted, but framed as a question in the WASHFIT tool:

“Do seasonality and/or climate change affect WASH services and are there plans in place to cope with this?” (WASHFIT, A practical guide for improving quality of care through WASH in HCFs).

3.5.6 WASH in Healthcare Facilities and Disaster Risk Reduction

Measures to reduce or eliminate the impact of climate change, civil disruptions and anthropogenic activities at the healthcare facility were mentioned:

“Buildings are designed, and activities are organized so as to minimize the spread of contamination by the movement of patients, staff and careers, equipment, supplies and contaminated items, including healthcare waste, and to facilitate hygiene” (Essential Environmental Health Standards in Healthcare).

“Care must be taken, when siting latrines, to avoid contaminating groundwater and risk of flooding” (Essential Environmental Health Standards in Healthcare).

The national documents mention DDR in light of the general public not specific to the healthcare and WASH facilities.

3.5.7 WASH in HCF and Emergency Preparedness and Response

Healthcare services are needed in times of disasters or disease outbreaks. The importance of WASH in healthcare facilities as part of emergency preparedness was highlighted:

“WASH services strengthen the resilience of health care systems to prevent disease outbreaks, allow effective responses to emergencies (including natural disasters and outbreaks) and bring emergencies under control when they occur” (WASHFIT, A practical guide for improving quality of care through WASH in HCFs).

The national monitoring tool mentioned emergency preparedness in terms of referral systems, functional emergency teams and the presence of ambulances for patient transportation to referral hospitals:

“Emergency preparedness and Timely Response in facility and referral. Has there been any referral in the last one month? Do you have a functional emergency response team?” (UHC Level 2 and 3 Final Supervision Tool).

At the county level, the hospital preparedness did not include WASH:

Hospital Preparedness. Infrastructure—Numbers of hospitals with Casualty Departments, ICU, Bed capacity, morgue facilities. Human resource—well trained cadres (Basic Life Support, Advanced Cardiac life Support.) Contingency/response plan updated. Disaster emergency kits, medicine stockpiles. Community support- alternative treatment centers (Health and Nutrition Sector Contingency Plan, 2019).

3.5.8 WASH in Healthcare Facilities and Stakeholder Engagement

WASH in healthcare facilities stakeholders emerged in six (6) documents. The implementation of WASH in healthcare facilities is a multi-stakeholder activity. At the National level:

“However, WASH is not the responsibility of the Ministry of Health alone. Ministries of Water and Sanitation are critical for improving municipal WASH supplies and providing technical expertise to health care facilities. Ministries of Finance can provide important budget allocations and financing mechanisms. Moreover, local governments have a responsibility to manage and fund WASH at the local level. Overall, coordination requires a high level of leadership beyond any one ministry to ensure a common, cohesive approach” (WASH in HCF, Practical Steps to Achieving Quality Care).

Specifically, quality health care services should be monitored:

“The district health management team (DHMT) is responsible for monitoring the facilities within the district for using and complying with IPC practices. The DHMT is also responsible for ensuring that adequate and

appropriate resources are available to support IPC practices within these facilities” (National Infection Prevention and Control Guidelines for Health Care Services in Kenya).

Other aspects of stakeholder engagement are training, monitoring and evaluation were mentioned.

“Prepare a budget that reflects aims and available resources, with potential to scale-up. The training budget should realistically consider all the costs, which include the actual training, but also the followup support that is required to assist facilities in ongoing challenges and improvements. In addition, it is useful to consider the funds for physical supplies as even providing some minor, immediate improvements (such as hand hygiene stations, low-cost water filtration or on-site chlorine generation) can help realize major improvements in reducing health risks and set the foundation for longer term improvements such as piped water” (WASHFIT, A practical guide for improving quality of care through WASH in HCFs).

3.6 Discussion

Guided by the political ecology of health theory this paper explored the framing of WASH in healthcare facilities in relevant policies, guidelines, legislation, plans, monitoring and evaluation documents at the global and national context using Kenya as a case study. In these documents, WASH in healthcare facilities was framed in relation to the importance of WASH in a healthcare facility such as infection prevention and control, quality care and achieving universal health coverage. It was also framed in terms of infrastructure in healthcare facilities. From a political ecology of health perspective, the global agenda on WASH in healthcare facilities influenced the growing concerns of WASH in healthcare facilities at the national level in Kenya. From this study, the global agenda on achieving the sustainable development Goal 3 and Goal 6 influenced political, social, economic and cultural factors in the implementation and use of WASH in healthcare facilities in Kenya. The global resolutions, guidelines, and monitoring documents are guides for national level adaption. Similarly, with respect to the influence of global campaigns on national agenda, Asiki et al. (2018) established that the Kenya national guidelines on cardiovascular diseases were guided by existing global initiatives and guidelines such as the Tobacco control act.

Specifically, the global campaign on achieving universal health coverage led by the World Health Organization accelerated movements to implementing universal health coverage in Kenya as stated in the Kenya health policy (2013–2030). Kenya is currently piloting universal health coverage in four counties. The acronym WASH means water, sanitation, hygiene, waste management and environmental cleaning (WHO and UNICEF, 2019). From this research, a comprehensive mention of WASH in healthcare facilities was more prevalent in global documents as compared with national documents. Two national documents mentioned water, sanitation and hygiene in sentences excluding environmental cleaning and waste management. Other national documents mentioned one of these components. First, this could be associated with the fact that the global documents addressed WASH in health care facilities specifically. None of the national documents were published specifically for WASH in healthcare facilities. Second, most of the national documents were published before the agenda for WASH in healthcare facilities was promoted by international institutions. In addition, the final monitoring tool for universal health coverage does not comprehensively measure access to and functionality of water, sanitation, hygiene, waste management and environmental cleaning. It monitors aspects of water and hygiene. Waste management, sanitation and hygiene are in the same category. For instance, the presence of a functional incinerator, a well-protected ash pit, a well-protected placenta pit and having a set of three color-coded bins in all wards and clinical departments and used for segregating waste at the point of generation are in the same category. At the time of data collection, a universal health coverage policy or agenda was not instituted. However, it was evident from the final universal health coverage monitoring tool for the Kisumu County that efforts towards the implementation of universal health coverage were directed more towards finance and registration of citizens than provision of quality care. WASH indicators for use in healthcare facilities were not adequately

presented and this could have impacts on the planning and financing of quality care when the universal health coverage program is fully rolled out in the country. Similarly, McCord et al. (2019) highlighted the need for quality data collection on relevant WASH in healthcare indicators to achieve environmental health policies in healthcare facilities in their research in Malawi. In addition, inadequate or inconsistent data will complicate the assessment of interventions towards implementing universal health coverage (Weststrate et al., 2019). It was also evident that the previous healthcare facility monitoring tool, titled the *Integrated Management Supportive Supervision tool*, measured more WASH in healthcare indicators than the *final universal healthcare monitoring tool* measured. Although this tool did not comprehensively cover all the aspects of WASH, it touched on all five components of WASH. For instance, the tool monitored separated toilets for staff and patients.

WASH in healthcare facilities cannot be achieved without the input from and actions of relevant key stakeholders at both the national and global levels. Ensuring access to WASH in healthcare facilities is complex and requires the efforts of different institutions. Forming partnerships are very critical to achieving complex and connected challenges (Venghaus & Hake, 2018). The global documents such as the WASH resolutions document listed some key institutions; ministries of health, water, finance, and energy in achieving WASH in healthcare. Other relevant key stakeholders include communities where healthcare facilities are situated and nongovernmental organizations. WASH in healthcare facilities was also framed in terms of stakeholder engagements such as trainings. Training on WASH management or infection control, budgeting of funds for implementing WASH in healthcare services and monitoring and evaluations are some of the key roles of government and nongovernmental organizations mentioned in both the global and national documents. For instance, inadequate data collection has been associated

with lack of technical knowledge on policy documents or monitoring tools by government officials (McCord et al., 2019). This barrier hinders advocating for the appropriate resources required for effectively implementing environmental health policies and plans by civil society groups and non-governmental organizations. Maina et al. (2019) in their research on the role of WASH in healthcare facilities in averting anti-microbial resistance in 14 county level hospitals reported inadequate resource allocation by the government as a key challenge to accessing WASH in healthcare facilities. Similarly, Guo & Bartram (2019) reported that about a fifth of facilities overall 14 countries they investigated as part of a study to explore predictors of water quality in rural healthcare facilities reported having an insufficient budget for supplies for water, sanitation and hygiene or infection control. Resources or funding is a major requirement to implementing WASH in healthcare facilities (Davis, 2018). Anderson et al. (2020) in their paper expressed the need for WASH in healthcare facility stakeholders to adequately monitor the quality, quantity, input and output of WASH services in healthcare facilities to ensure effective costing when planning for water, sanitation, hygiene, waste management and environmental cleaning in a healthcare facility. It is also recommended that WASH national documents in SSA should include relevant stakeholders such as the cleaners and maintenance officers since they directly deal with issues of WASH in a healthcare facility (Anderson et al., 2020).

The importance of WASH in healthcare facilities cannot be underestimated in terms of infection control and prevention and safety of facility users and workers. Cleaning and disinfection of healthcare facilities prevent disease transfer and if not adequately handled weakens the healthcare system. Similar to the Ebola outbreak, the current COVID-19 outbreak has compromised the quality of care in many healthcare facilities and a growing number of healthcare workers have died even in global north countries. However, WASH is not listed as a requirement

for hospital preparedness in the 2019 County level health and nutrition contingency plan. The issue of WASH and safety of patients, caregivers and workers were dominant in global documents than the national documents. The national infection prevention and control guidelines for health care services in Kenya clearly lays out the procedures, roles and responsibilities in infection prevention and control at the health care facility. Other documents mentioned the need for ensuring a safe working environment for healthcare workers, but do not clearly define what a safe environment means. However, the previous monitoring tool for healthcare facilities monitored the presence of personal protective equipment such as the single use of aprons, goggles, gloves, fire extinguishers and fire exit. The safety and functionality of WASH services in healthcare facilities were also framed in the context of natural disasters such as drought and floods. Only the health act mentioned issues of WASH in healthcare facilities in association with impacts of climate change. WASH infrastructure and climate change is also framed as a caution to ensure WASH infrastructure are efficient and can withstand and recover from the shocks of climate variability impacts. For instance, engaging in waste burial or burning in a flood prone area facilitates surface and ground water contamination. Civil disruptions such as political instability burdens the functionality of healthcare facilities and WASH infrastructure in two ways. The structures are often destroyed, or the healthcare facilities are burdened with people seeking healthcare. However, these civil disruptions are not mentioned in the global documents in the context of WASH in healthcare facilities. Kenya has recorded several civil disruptions. Of most significance is the post-election violence in 2017. Civil disruptions need to be considered in WASH in healthcare facility planning, implementation, and maintenance. This brings to question the framing of WASH and disaster risk reduction in healthcare facilities. Disaster risk reduction was framed as a recommendation to healthcare managers.

The universal health coverage policy was not available at the time of this study, the authors only had access to the final universal health monitoring tool for level 2 and level 3 facilities. This is a limitation of this study since the authors could not comprehensively analyze the framing of quality care as part of the universal health coverage campaign in the country. However, access to the UHC final monitoring tool highlights the indicators of UHC being prioritized during the piloting phase. This phase is critical to the finalization of the UHC policy in the country.

From a policy perspective, there is a need for the development of a national level WASH in healthcare facility guideline which addresses contextual factors of Kenya across all levels of the healthcare system. All relevant stakeholders should be engaged in the development of a comprehensive binding document on WASH in healthcare facilities. This is necessary because research has closely associated the prevalence of disease and poor health management to the lapses in government policies in Ghana than other countries (Mkandawire et al., 2013). Second, the final monitoring tool for universal health coverage needs to be revised to comprehensively measure water, sanitation, hygiene, environmental cleaning and waste management indicators in healthcare facilities using the global tools as guides. It will ensure effective data collection, planning and implementation of WASH in HCF. For example, it is evident that integrating WASHFIT training and supervision enhance quality service provision in healthcare facilities (Weber et al., 2018). Similarly, researchers have contextualized some monitoring tools in WASH in HCF research. Maina et al. (2019) adapted and contextualized the WASHFIT tool and developed WASHFAST for the assessment of WASH indicator performance in facilities beyond primary healthcare level. The authors developed a total of 65 WASH in healthcare indicators relevant to monitoring WASH in hospitals in limited resource areas. In addition, there are existing monitoring tools which can be useful in monitoring WASH in HCF indicators. Patel et al. (2019) review on WASH in healthcare

monitoring tool developed from 1991 to July 2018 recommended the need for more comprehensive and concrete WASH in health care monitoring tools. A recent assessment by the USAID and Maternal Child Survival Program on the Kenyan Health Management Information Systems (HMIS) indicated that half of hospitals surveyed used an electronic medical record that was not linked to the District Health Information Software (DHIS2) in 2016 (USAID and MCSP, 2016). The HMIS and the DHIS2 could be instrumental in monitoring required WASH indicators and quality services should relevant WASH indicators be included. From this review, the District Health Management Team (DHMT) is responsible for monitoring all activities in healthcare facilities. Access, functionality, safety and availability of water, sanitation, hygiene, environmental cleaning and waste management indicators should be reviewed by the DHMT. Effectively monitoring the indicators of WASH in HCF will efficiently prepare facilities for disease outbreaks and disasters. In addition, it is evident that Kenya has policies, plans and guidelines which when enforced can address the issues of quality healthcare facilities. For instance, the need to include WASH infrastructure in healthcare facilities was published in the National Infection Prevention and Control guidelines for healthcare services in Kenya in 2010. This is again emphasized in the Kenya Environmental and Sanitation Policy, published in 2016. It is evident more needs to be done to ensure policies are fully implemented (McCord et al., 2019). Commitment by all state officials, nongovernmental organizations and civil society groups are needed to achieve quality care in healthcare facilities. A review of reports on global meeting on WASH in healthcare facilities: from resolution to revolution and the WASH in health care facilities stakeholder commitments indicated varied levels of commitments. Several partners such as non-governmental organizations and private institutions have made commitments to support Kenya through global/national/local advocacy, technical support, implementation, research and learning (WHO/UNICEF, 2019a).

However, Kenya government or country was not listed in the country level commitment section of the report published in 2019 (WHO/UNICEF, 2019b). Commitment and prioritization of WASH in healthcare facilities by the country's institutions and leaders will accelerate achieving quality healthcare. Issues of WASH in healthcare facilities should gain equal prominence as issues of financing curative measures in healthcare facilities in the yet to be implemented UHC policy across the country by 2022.

3.7. Conclusion

In summary, accessing quality healthcare services is a challenge especially in marginalized areas. The lack of access to water, sanitation, hygiene, environmental cleaning, and waste management in healthcare facilities affect the quality of care provided. From this research, relevant documents addressing issues of WASH in healthcare facilities, quality health services and universal health coverage at the global and national levels framed WASH in healthcare facilities in terms of its importance, like infection prevention and control and enhancing universal health coverage and types of infrastructure. Factors such as climate change and civil disruptions that affect the access and use of WASH in healthcare facilities were also highlighted and framed as precautions to healthcare managers. However, the national document did comprehensively covered issues of water, sanitation, hygiene, waste management and environmental cleaning. In addition, the global guidelines at the national level are not comprehensively implemented which will lead to recurrent insufficient data on WASH in healthcare planning. The influence from the global level on universal health coverage implementation at the local level is positive, but efforts at the national level were directed at the number of citizens registering and medication supply. Efforts should also be directed towards ensuring healthcare facilities have the appropriate infrastructure for infection control and safety of healthcare facility users. Ensuring good health

through providing care as stated in SDG 3 cannot be achieved without efforts to achieve WASH, SDG 6 at a healthcare facility.

Chapter 4: “When You Preach Water and You Drink Wine”: WASH in Healthcare Facilities in Kenya

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Abstract

Access to basic water, sanitation and hygiene, waste management and environment cleaning (WASH) in healthcare facilities (HCFs) is critical for infection prevention and control. The WHO/UNICEF 2019 global baseline report on WASH in HCFs indicates 51% and 23% of those in sub-Saharan Africa have basic access to water and sanitation, respectively. Guided by political ecology of health theory, this research engaged with 13 key informants, 16 healthcare workers and 31 community members on their experiences on the implementation, use and management of WASH in HCFs. Interviews were conducted in one informal settlement and three rural dispensaries in Kisumu, Kenya from May to September 2019. Findings indicate improvement in water access, yet water quality and other WASH service components remain a challenge even in newly constructed maternity facilities, thus impacting local health promotion efforts. Institutional challenges such as limited financial resources and ecological factors like climate variability and disease outbreaks compromised WASH infrastructure and HCF resilience. To achieve Sustainable Development Goal 3, good health and wellbeing, as well as 6, clean water and sanitation, prioritisation of WASH in HCFs is required at all levels, from the local to the global.

Keywords: Emergencies, Governance, Healthcare facilities, Politics, WASH.

4.1 Introduction

Health care facilities (HCFs) require safe water, sanitation, hygiene, environmental cleaning and waste management (WASH) to provide quality services to promote, restore, maintain and improve health. The lack of access to WASH in HCFs contributes to increasing infection rates (Allegranzi et al. 2011), while inconsistent supply of water limits essential activities like handwashing and cleaning. As a result, some HCFs only minimally fulfil their role of supporting patients (Essendi et al., 2015). For example, lack of safe WASH infrastructure has been shown to impact women's safety, privacy and comfort accessing HCFs (Steinmann et al., 2015). Research links neonatal sepsis and maternal mortality to poor hygiene resulting from lack of safe WASH (Blencowe et al., 2011). In developing countries, 4 to 56% of all health care associated infections caused death during neonatal periods; 75% of these cases occurred in South East Asia and sub-Saharan Africa (SSA) (WHO, 2013). In SSA, only 51% of HCFs have basic access to water and only 23% have basic access to sanitation (WHO and UNICEF, 2019). The situation of WASH in HCFs is more precarious in rural areas where 15% of rural HCFs had no access to water services compared to 5% of urban HCFs (WHO and UNICEF, 2019). In addition, the quality of WASH services provided remains a challenge; Guo & Bartram (2019) found *E. coli* in sampled water from HCFs in 14 low-and middle-income countries (LMICs).

Major global events such as climate change and disease outbreaks (e.g. Ebola and COVID-19) compound WASH service challenges. For example, water scarcity is expected in drought-prone areas (Paterson et al., 2014). Furthermore, recent Ebola outbreaks in SSA resulted in compromised health service delivery due to disease spread and mortality of many, including healthcare workers (Shoman et al., 2017). These recurring events require HCFs to be adequately equipped to sustain WASH services provision, even during adverse events. From 1990 – 2014,

18% of reported global disasters were from SSA (IMF 2016). This region experienced 39% of epidemics, 37% of floods and 8% of droughts globally. Building health facility resilience (i.e., the capacity to absorb the shock of an emergency and at the same time continuing to provide regular health services, without jeopardizing full functioning of other sectors) is critical to achieving Sustainable Development Goal 3 (health and wellbeing for all) and 6 (water and sanitation for all). Guidelines such as the Sendai Framework for Disaster Reduction aim at reducing disaster risk, loss of lives and livelihoods (United Nations, 2015). Its fourth target seeks specifically to “*Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030*” (United Nations, 2015). Achieving this target means ensuring the effectiveness and efficiency of all the components of a HCF, including WASH.

This paper explores the contribution of safe WASH to resilient HCFs, using Kisumu, Kenya as a case study. We undertook in-depth interviews with key informants (n=13), health care workers (n=16), as well as community members (n=39) to explore the social, ecological, and institutional challenges hindering access to safe WASH in HCFs. Following this introduction, we frame the paper within political ecology of health theory and then describe the research design and methods used. Results stemming from a comprehensive thematic analysis of the interview data are followed by a discussion and conclusion that includes recommendations for research, policy, and practice.

4.2 Framing Access to WASH in LMICs

We are guided in this investigation by political ecology of health (PEH), which provides an effective merger between political ecology and population health (King 2010). PEH directs us to focus on how health patterns are produced through circumstances of living, and arrangements of power and politics (King 2010). Power and politics influence decisions made at the macro scale

(national governments, global agencies) as well as the mesoscale (county level managers) subsequently affecting the quality of health service delivered at the community level. PEH also allows us to explore power struggles at the micro-level where grassroots actors influence policies, regulations, guidelines, and practices. In many parts of the world, marginalized groups have been able to resist oppression from structural processes, thus exhibiting their own power (Bryant & Bailey, 1997). For instance, communities with attachments to and responsibility for local hospitals, through identity, politics and activism, have successfully opposed the state and other actors when these hospitals were threatened with cuts or closure (Andrews et al., 2012). In the context of WASH, PEH has been used to explore how institutional and individual power influenced access to water in Kenya (Bisung et al., 2016). In the context of HCFs, PEH can be used to explore structural factors that influence access to WASH and the agency of facility workers and managers in managing WASH in HCFs.

4.3 Research Design and Methods

This cross sectional research was conducted in Kenya, an east African country with a population of approximately 48 million people (KNBS, 2019), identified as a hot spot for both drought and epidemics (International Monetary Fund, 2016). With a decentralized system of governance, health functions have been devolved to the county level (Constitution of Kenya, 2010). The development of health policies, norms, standards, and guidelines, managing national referral HCFs, capacity building and technical assistance to counties are tasks of the national government. Currently, the national government is piloting a universal health insurance coverage scheme in four counties, including Kisumu County where this research was conducted. The county government is responsible for the promotion of primary health care and all county health services including waste management. In recent times, the county governments have undertaken new

strategies and initiatives to address the health needs of their populations, including the construction of additional health facilities.

Kisumu County has a population of approximately 1.5 million people (KNBS, 2019) and shares a boundary with Lake Victoria. Kisumu's communities along the lake are prone to climate impacts including floods (Ajuang et al., 2016). Research by Achoki et al. (2018) identified access to unsafe WASH as a leading national risk to health in Kenya, with Kisumu county also identified as a hot spot for unsafe WASH. The research reported on in this paper was conducted in four dispensaries located in one informal settlement and three rural communities in Kisumu County. Dispensaries are the first point of care for patients in rural and marginalised areas. These four facilities offer preventive, curative, maternal and childcare services and operate 8 hours per day, 5 days a week. This means that during weekends and at night, community members must seek medical attention at private health facilities nearby or government hospitals in Kisumu town. Typical health issues reported at these facilities include malaria, respiratory diseases, diarrheal diseases, urinary tract infections and E/E (eye and ear) infections.

The research was conducted in partnership with COHESU, a local non-governmental organisation (NGO) with interest in conducting and translating research into operational and sustainable strategies in health prioritisation in communities in the Lake Victoria region. This research was granted ethical clearance (ORE #: 40927) from the University of Waterloo Ethical Board as well as the county Ministry of Health. Data were collected through in-depth interviews with stakeholders (N=68) between May- September 2019 in Kisumu, Kenya. Interview guides were developed to direct the scope of the interviews. Thirteen Key Informants (KIs) (representatives of NGOs and county government) were purposively sampled due to their knowledge and engagement in decision making and/or funding of WASH services in HCFs. We

emailed or presented letters of invitation to the KIs, and healthcare workers and we proceeded to conduct interviews after a scheduled appointment at their preferred location. KIs were asked a range of questions including their role in providing access to WASH in HCFs. Healthcare workers from four dispensaries were purposively targeted for recruitment as they used and managed WASH services in HCFs. At each facility, the nurse in charge, a public health volunteer, a community health volunteer and a cleaner were interviewed. All four facilities were managed and cleaned by female nurses and female cleaners respectively. Healthcare workers were asked a range of questions related to WASH management and use in HCFs. The researchers visited community chairpersons to inform them about the research. Community members (patients and caregivers) were recruited to participate in this study through invitations issued by through healthcare workers interviewed. The experiences and observations of community members in the use and management of WASH services in HCFs are germane to understanding access to and use of WASH in HCFs. Community members were asked a range of questions including their experiences with accessing WASH in HCFs. Majority of the interviews were conducted in English. Some interviews were conducted in Swahili and Lou. With the consent of each participant, interviews were recorded and later transcribed for subsequent thematic analysis using NVivo. We developed a coding schedule that highlighting emerging themes from the transcripts.

4.4. Methods

Interviews were conducted with KIs from both government and NGOs (n=13), a range of health care workers (n=16) as well as patients and those who care for them while in the HCFs (n=39) (Table 4.1). Results are presented around four key thematic areas that emerged from the qualitative analysis of the interviews. We explored the experience and perceptions of WASH in

HCFs, the challenges associated with lack of WASH in HCFs, emergency preparedness and potential policy directions.

Table 4:1 Characteristics of Participants

Groups of participants		Subgroups	Pseudo Identifiers	Number per Group	Total N(Participants)
Key Informants	County Level	NGOs	K ₁ - K ₁₃	8	13
		Government Officials		5	
	Healthcare Workers	Nurses in Charge	N ₁ -N ₄	4	16
		Public Health Officer	P ₁ -P ₄	4	
		Community Health Volunteers	CV ₁ -CV ₄	4	
Cleaners	C ₁ -C ₄	4			
Community Members		Patients	PC ₁ -PC ₁₉	19	39
		Care Givers	CG ₁ -CG ₂	20	
Total					68

Table 4:2: Coded Themes

Response	No. of Mentions by each group of participants (%)					Total N(Participants) (%)
	KI	HCF staff	Patients	Caregivers	Total Mentions	
Situation of WASH in HCF						
Improved access to water in HCFs	2 (5)	22 (55)	10 (25)	6 (15)	40	30 (44)
Plumbing Challenges	8 (19)	26(60)	4 (9)	5(12)	43	22 (32)
Poor Sanitation	6 (21)	8(28)	9 (32)	6(21)	28	24 (35)
Poor Waste Management	6 (25)	14(58)	1(4)	3(13)	24	16 (24)
Water Disconnections	7 (36)	4(21)	3(16)	3(16)	19	15 (22)
Poor Water Quality	6(38)	7(44)	2(13)	1(6)	16	12 (18)
Poor Hygiene	7 (35)	10 (50)	2(10)	2 (10)	20	12 (18)
Poor Environment Cleaning	0	4 (57)	1(14)	2 (29)	7	7 (10)
Challenges implementing and managing WASH in HCF						
Limited financial Resources	18 (67)	14(52)	2(7)	3(11)	27	23(34)
Prioritization	9(69)	2(15)	1(8)	1(8)	13	10(15)

Poor monitoring and evaluation	8(62)	3(23)	0	2(15)	13	10(15)
Limited human resource (staff)	2(20)	6(60)	0	2(20)	10	9(13)
Corruption	3(50)	2 (33)	0	1(17)	6	6(9)
Poor Coordination	5(71)	2(29)			7	6(9)
Emergency Preparedness: are HCFs building resilience for unforeseen emergencies?						
Yes	3 (12)	8(31)	11(42)	5(19)	26	26 (38)
No	11(37)	7(23)	2(7)	10(33)	30	30 (44)
Unsure	1(8)	1(8)	6(46)	5(38)	13	13(19)
Policy Direction						
Prioritization/Funding	14(47)	12(40)	1(3)	3(10)	30	20 (29)
Building Authentic Partnership	14 (61)	6(26)	3(13)	0	23	15 (22)
Effective Planning	9(50)	6(33)	1(6)	2(11)	18	13(19)
Education	9(69)	2(15)	2(15)	0	13	10(15)
Enforcing Existing Regulations.	5(100)	0	0	0	5	5(7)
Monitoring and Evaluation	1(50)	1(50)	0	0	2	2(3)

4.4.1 Situation of WASH in HCFs

Interviews began by exploring participants' perceptions of WASH in HCFs (Table 4.2). Improved access was a major theme strongly highlighted by healthcare workers and facility users. As of December 2018, Kisumu Water and Sewerage Company (KIWASCO), responsible for the county piped water system, had connected water to all four communities in this research. Each facility had benefited from this investment with at least a standpipe. However, water challenges persisted and health care workers and KIs were concerned about poor water quality as well as availability.

“There is improvement in the facility, first this water from KIWASCO even though it is not clean as such” (C4).

Poor water quality was attributed to interference of water lines by road contractors:

“There are a lot of road contractors, they interfere with the lines, so when they interfere with the lines you can find that a hospital is disconnected, they don't have water and there is a problem with the quality.” (K12)

Health care workers treated water with water filters and water guards provided by local NGOs and improvised equipment such as tippy taps to ensure running water for handwashing, due to limited plumbing. More concerning for healthcare workers and KIs was the fact that new HCFs were being constructed with little or no plumbing infrastructure. These constructions were spearheaded by members of the county assembly (MCA) who are also the development agents. They represent their wards in the county assembly in Kenya, and are mainly responsible for law making, approving national budgets and county development plans.

“A new building has been constructed, there is no septic tank and they (development agents) are insisting they open the facility, so many buildings without WASH facilities” (K₁₃).

Also, to avoid high water invoices, health facility managers control water availability by locking pipes.

“You may find that there is water, but it is under lock and key... you may find that in a particular quarter, there is no allocation for bills” (CV1).

Officials at the county level intervene when payments are delayed:

“We have reached out as subcounty medical officers of health to KIWASCO at some point to give them the list of all the healthcare facilities, so that they have a grace period in paying their bills, sometimes these bills pile up too much...So many times, you find health facilities being cut off totally” (K₁).

Many participants reported the poor standards of other WASH aspects in the HCFs (i.e., sanitation, hygiene, waste management, environmental cleaning). Waste management was a major concern for healthcare workers as facilities burn their waste and for some participants, open burning was a risk for the community especially children who played in the area. Healthcare workers were also concerned about the risks of storage and transportation of used sharps (needles, scalpel etc.) to the county referral hospital as required by the county Ministry of Health.

“For the waste, I feel that if we had an incinerator or burning chamber, it will ease our work because we are forced to store and call for a vehicle to come and collect the sharps in the safety boxes to burn them that to me I feel it is not safe. They are to be disposed immediately, in the shortest possible at the right place” (P₃).

Although environmental cleaning is an important aspect of the hygiene associated with HCFs, this was mentioned relatively infrequently (Table 4.2), with HCF workers and caregivers concerned about the bushy surroundings and related risks:

“The compound of the facility sometimes it’s not clean. Even if you look at the compound as we speak, there are many bushes. Sometimes you are a patient and you come with a kid, and the child wants to go to the toilet, she or he can’t walk through the bush. For the child to reach the toilet he can even meet with anything bad” (C₁₅).

Despite these challenges, many HCF users reported positive attitudes toward the WASH situation simply because it was better than it had been. Participants expressed a variety of emotions about the situation of WASH in HCFs:

“It makes us feel great because even that water once it is here, it helps us. If my home is even nearer as I have told you, I can come and get water from the dispensary, it has helped me because it is a community dispensary it is not a private dispensary” (CG₉).

“I’m now feeling quite good but not so much because they are still average, they have not come up to the standard that we want as needed by the Ministry of Health. Just like I have said, the water has not been connected to the toilets, so if you use the toilet, you have to come to that tank to WASH your hands. But you see most of the toilets in town or other health facilities you will find water is in the toilets” (PC₇).

Alternatively, several key informants and health care workers felt WASH in HCFs remained inadequate; in addition to Infection Prevention and Control (IPC), WASH in HCFs was perceived as an example to the community and its availability affected community health promotion where community members are encouraged to practice safe hygiene and refrain from open defecation:

“It makes me feel demoralized somehow because when you preach water and you drink wine, it does not go out well with the patients and everybody, because we have to lead by example as health care, as we prevent these diarrheal diseases. We have a lot of diarrheal diseases in this place. So when you tell them to go and wash hands after visiting the toilet and they don’t see you do it, you feel demoralized like you are not doing the right thing.” (N₃)

4.4.2 Challenges

Given the current poor state of WASH in HCFs, participants were asked about some of the challenges associated with the implementation and management of WASH in HCF (Table 4.2). Not surprisingly, limited financial resources was the most frequently mentioned challenge, with

financial resources typically insufficient and/or delayed and with so many competing priorities, WASH may not be at the top of the list:

“The money that is dispersed to the healthcare facility sometimes are not very regular, if I could bring in the situation that is happening right now, we have issues with the governors and the government, they have a push and pull about how much money should be allocated, the national government says we don't have much money the county government is saying we need more money to implement our developmental projects so obviously the money comes in late because this standoff has not been resolved yet”(K₁).

“As much as the facility will want to connect, they have no resources, they don't access any money and most of the money if they get any goes into expenses like drugs, and paying of casual workers, so water is almost number 10 on their hierarchy in terms of needs, because they have more casual workers to be paid”(K₃).

Funding constraints of course lead to inadequate staffing, with only one person per facility responsible for all cleaning responsibilities:

“One thing I can say this building is not small and I'm just alone and sometimes I'm sick there is no one to take charge that one is a challenge. Another thing also about the stipend I'm getting in the facility, it will take three to four months before I get the stipend so that one also is a challenge because I am a mother with a family so if it takes three to four months, it is a challenge to me”(C₄).

At the county level, inadequate staffing meant that monitoring and evaluation by county officials were often limited:

“There is a lack of adequate monitoring and evaluation because when these facilities are done there should be proper monitoring and inspections before they are handed over so we can have so many projects in a county and you will find that the personnel who are supposed to do the monitoring are very few, they are not able to reach all these facilities” (K₁₁).

Systemic corruption also played a major role in inadequate WASH in healthcare facilities.

“The last opinion is corruption, people may do an incomplete project and even be paid because there are corrupt people who may intend not to follow the correct procedure, they may not follow the correct designs or they do the designs and do things halfway or haphazardly” (K₁₁).

Prioritisation at the national and county levels is essential to ensure the allocation of funds for WASH in HCFs. At these levels, curative measures received much attention compared to preventive even with the universal health coverage (UHC). From the study, the managers of the facilities who are also the nurses in charge played very key roles in prioritising WASH in HCFs.

“For the government of the day, I doubt if it is a priority, because if it is a priority, then I think it could have been the first thing to be installed when this construction was being done, it was just brought by the management who saw the need for this. In fact, it was through their efforts that they managed to install water in this facility though the funds that came from the government but it was their decision to use the funds to install water in this facility but nobody from the Ministry came to sensitise them”(CV₁).

At the community level, some participants perceived that the national and county levels prioritise curative because patients prioritise curative as opposed to preventive and IPC in HCFs.

“When a patient comes to the hospital, the first thing they want is drugs as opposed to the nurses washing their hands before handling them”(K₃).

In addition, KIs and some workers attributed the lack of WASH in HCF to coordination and consultation process (Table 4.2). The healthcare managers thought their concerns on WASH in HCFs were not incorporated in the MOH county plans.

“I don’t know after the research how you are going to help us, because maybe someone from outside can be listened to better than somebody on the ground. When you go and give the feedback to the county or the subcounty they may have an ear on what you are talking about, what is on the ground other than us talking about it they see it very usual. So, I will like you after the study to share with the sub county and county so they can know the impact on the ground and the need for those sanitation facilities and water”(N₃).

Similarly, at the county level, Ministry officials faced similar challenges with the political leaders and county agents of development.

“ Some of those facilities are built with what we call, a political move, so most of these facilities that are sprouting up are being built for politics so that the area representative says, I built a hospital for you, so because they are done in haste with political mileage, they don’t necessarily follow the guideline and that is why many times you will find they don’t meet the standards and there is nothing the technocrat and health ministry can do about a political movement, it is beyond them”(K₃).

4.4.3 Emergency Preparedness

We also explored the role of WASH in emergency preparedness with all the research participants. Compounding the already poor situation of WASH in these HCFs is the threat of impending disasters such as floods, droughts, and disease outbreaks. Kisumu county is burdened with frequent diarrheal and malaria outbreaks which constrain healthcare resources and infrastructure. Sometimes the disease outbreaks are a result of climate impacts like drought or heavy rain events. A participant recounted cases of facility toilets collapsing due to the local geology:

“So I will say WASH in healthcare, we have only intervened in areas where there are disasters within the area, maybe emergencies, in Usoma there is a toilet which collapsed, ... the toilet collapsed because of the soil,

black cotton soil here in Kisumu if you don't have a very good design, when it is raining the toilet will just go down”(K₁₃).

All participants were asked whether or not HCFs could be resilient to such disasters. In response, 44% said no, 38% said yes, and 19% were unsure (Table 4.2). Some participants were of the view that facilities can withstand emergencies because of the strong referral system:

“I tend to think that disease surveillance response in Kenya is quite admirable because once an outbreak is reported, there is that channel of communication and a lot of efforts are channelled to ensure that everything is put under control, so again it depends on the healthcare facility, in terms of human resources and the equipment and all those things that are needed to make complete a healthcare facility and but in terms of response we are doing fine with that, from my own perspective”(K₂).

Others were of the perspective that HCFs were not building resilience for emergencies and cannot recover should a serious disease outbreak occur due to lack of WASH services. Provision for IPC measures to prevent the spread of diseases are made only after outbreaks occur:

“The plan only comes only after the disease outbreak comes that is when you see people running around. Like even the time when the cholera came, that was when they had to open this building, bring soaps, employ more cleaners. So, the emergency plans are not there”(CV₃).

4.4.4 Policy Direction

We further engaged respondents in the discussion of potential policy directions to ensure resilient access to safe WASH in HCFs (Table 4.2). The most frequently mentioned policy direction was the prioritization of WASH in HCFs across all levels. Participants felt that when WASH is prioritised and adequately funded, WASH infrastructure will improve:

“I think it is about prioritizing our needs, as a county and as a country just to realign to the thought that having safe WASH has better outcomes than not ... I was working for a maternal child survival programme we came up with this clean clinic approach just to ensure that the facility upholds the standards required to be termed as a safe WASH facility”(K₃).

For some participants, especially key informants, prioritization of WASH required a significant increase in the knowledge of the links between WASH and health. County officials

need education to understand policies. Likewise, community members need to be knowledgeable in WASH in HCFs as issues for advocacy:

“So what I will say is that, active citizen engagement or participation for them to be aware of what is really missing so they have the liberation to actually point that out and their needs and to actually speak up because why would a healthcare facility function without water, they have the ability to speak up and say that let it be closed down because it is our right to have WASH in health care facilities” (K₂).

Furthermore, partnerships are needed among all WASH stakeholders to ensure consistent regulations that require newly constructed HCFs to have adequate and resilient WASH infrastructure:

“If there is a policy where we could construct two facilities and finish two completely, then the next year we go to other wards, construct three like that, so at least within five years, all buildings would be complete but because we are doing it piece by piece then we will have problems” (K₁₃).

Finally, with the appropriate measures in place, effective monitoring and evaluation should be carried out while enforcing existing regulations. Nurses-in-charge are monitoring their facilities but are burdened by managing and delivering health services:

“I think they must form a body, a body that supervises everything, you know as you work some people do this work of supervising other departments but they have their own departments to work in .. because maybe if a body could be formed who does the supervision on sanitation and hygiene every time, they could spot that this facility lacks this and this so they put it in their own plans and are solved but so far it is you who is working here you have to know your problems, you have to know what you should be doing, how to improve upon that and make things work for you” (N₂).

4.5 Discussion

In this paper, we explored the experiences of stakeholders at the community, HCF, and county levels in Kisumu, Kenya. While there appears to have been progress in the provision of safe water in HCFs (all four studied had a piped water system within the premises, thus meeting the basic service requirement by WHO/UNICEF), adequate safe water, sanitation and hygiene remain major challenges thus threatening health promotion and disease prevention in the facility as well as the community.

A wide range of institutional and ecological factors were reported to affect access to WASH in these HCFs: limited financial resources, lack of prioritisation, poor monitoring and evaluation, limited human resources, corruption, and poor coordination and consultation. These interconnected challenges are founded in power and politics. This was also illustrated by Maina et al. (2019) who in a study in Kenya identified infrastructural design challenges, attitude of hospital managers and lack of funds as factors negatively impacting anti-microbial resistance in hospitals. WASH in HCFs was not prioritised at the county level and not adequately funded even with the recent piloting of the UHC (Abu & Elliott 2020). Furthermore, it appears from this research that patients and care givers prioritise availability of medication as opposed to access to quality and safe HCF services. Steinmann *et al.* (2015) concluded that access to WASH in HCFs in India was not a main driver for patient satisfaction or use of a HCF. At the facility level, with insufficient financial resources, the independent actions taken by healthcare workers including nurses resulted in positive change (e.g., in some dispensaries, mothers were provided with menstrual hygiene materials after delivery). Limited funds in HCFs directly restricted the number of casual staff cleaners employed; all four cleaners interviewed struggled to do their job but viewed it as a service to their community despite their dissatisfaction with conditions of employment. Cross et al. (2019) associated the neglect and undervaluing of cleaning and cleaners in HCFs with wider social and institutional arrangements; that is, beyond even limited resources, cleaning was regarded as “women’s work” and hence devalued within the HCF.

Poor consultation and coordination among technocrats at the MOH and the MCAs resulted in the construction of new maternity facilities without the appropriate WASH infrastructure (no running water, septic tanks, placenta pits, sanitation facilities) thus perpetuating the cycle of lack of WASH access. Maina et al. (2019) link the absence of plumbing works in HCFs to buildings

constructed 40 or more years ago when WASH and IPC were not prioritised. These newly constructed facilities were considered as political lifelines for political leaders, MCAs who were seeking re-election. Compounding this challenge was corruption. Some participants attributed the abandoned new maternity facilities to collusion between contractors and government officials to divert the required funds needed to complete the facilities. Examples of the impacts of corruption on the standards of HCFs in developing countries are not unusual (Stiernstedt, 2019).

The further challenges associated with waste management at HCFs (i.e., sharps disposal) could also be attributed to poor consultation, coordination, and monitoring. According to the WHO/UNICEF Joint Monitoring Programme for Water supply and Sanitation and Hygiene standards, waste collected in HCFs may also be taken outside for safe disposal. The challenge with this policy is that the county MOH did not take into consideration the challenges associated with safely storing and transporting used sharps. Not all facilities studied had the appropriate storage units. The challenges associated with transporting used sharps resulted in extended storage periods. During the Ebola outbreak, aside from IPC challenges, storage and transportation of the waste and wastewater were unanticipated challenges faced by facilities managers and represented a significant risk for infection (Meyer et al., 2018).

Finally, yearly floods from torrential rains and frequent disease outbreaks such as cholera affected the resilience of these HCFs. Soil type - black cotton soil—and floods led to the collapse of some latrines. Also, the high-water table from floods pushed up medical waste in disposal pits. This is a significant health hazard especially for children who play in the area. Even though some participants felt the facilities are prepared for any emergency because of the strong referral system, their ability to respond and recover from emergencies were clearly linked to available WASH services that were not adequately planned for.

While these are important findings relevant to the population health of Kenya and beyond, this research is not without its limitations. The cross-sectional nature of the data collection process limits the contextual framing of the results and their determinants. Understanding the need for, challenges to, and resilience of WASH in HCFs in Kenya (and beyond) requires further research, and over time. Despite this, we were able to triangulate the voices of health care workers, government agents, as well as patients and caregivers in order to paint a rather comprehensive picture of the experience, perceptions and challenges.

4.6. Conclusion

This research was informed by theories of political ecology of health – who has access to resources such as water? Those who have the power to make decisions. Access to WASH in HCFs will not change until the balance of power changes. And while WASH in HCFs in Kenya and beyond remains fragile, that fragility is exacerbated in the face of the not unrelated global threats of climate change and disease outbreaks. Major international organizations – WHO, UN – have developed frameworks to address this issue (see, for example, Sendai framework (United Nations, 2015) and the WHO guidance for climate resilient and environmentally sustainable HCFs (WHO, 2020) but without redressing the balance of power, universal access to safe WASH in HCFs in developing nations remains (pardon the pun) a pipe dream. It remains to be seen how the COVID-19 pandemic will add to this story.

Chapter 5: The critical Need for WASH in Emergency Preparedness in Health Settings, the case of COVID-19 Pandemic in Kisumu Kenya

Thelma Zulfawu Abu; Susan J. Elliott, The critical need for WASH in emergency preparedness in health settings, the case of COVID-19 pandemic in Kisumu Kenya. Health and Place (Under review).

Abstract

The inadequacy of basic necessities such as water, sanitation, hygiene, waste management and environmental cleaning (WASH) often affect the quality of care healthcare facilities (HCFs) dispense. This fact is underscored by the current global pandemic, for which many HCFs were grossly ill-prepared. The findings reported on in this paper emerged from the second phase of a research project on WASH in HCFs in Kenya. In the first phase, face-to-face in-depth interviews were undertaken in Kisumu, Kenya to understand the impacts of inadequate WASH in HCFs and the level of preparedness of these facilities for emergencies between May to September 2019. While those data were being analyzed, a global pandemic was declared on March 11, 2020. To capture stakeholder reflections during this natural experiment, follow-up virtual interviews were undertaken with key informants (KIs) (n=15) to explore the impacts of the COVID-19 pandemic on WASH in HCFs as well as community residents who access these facilities between August and September 2020. Results allow us to engage with the hypothetical and the real to assess recommendations for moving forward. The first phase findings reveal deeply rooted institutional challenges influenced by power and politics as well as environmental factors (floods, disease outbreak) shape access to WASH in HCFs. Research participants expressed varied perspectives on preparedness influenced by the availability of safe WASH services and the efficiency of the health referral system. Findings

from this phase indicated the advent of the COVID-19 pandemic amplified institutional challenges shaping access to WASH in HCFs and all participants indicated the healthcare system was ill-prepared for the pandemic. Health workers were psychosocially burdened and subsequently embarked on strikes in protest. Both situations influenced citizens' perceptions of the COVID-19 pandemic as a hoax and caused a surge in some health measures (maternal mortality). We recommend authentic partnerships among all stakeholders to develop and implement context-driven sustainable solutions that integrate WASH and emergency preparedness in HCFs across all scales.

Keywords: WASH, Health systems, Emergency preparedness, Kenya.

5.1 Introduction

The Millennium Development Goals (MDGs) were agreed to by world leaders in 2000 to ensure basic human needs were met by 2015. Access to safe water, sanitation, and hygiene (WASH) is critical to development yet was not represented as one of the 8 goals; rather, ensuring access to safe WASH was integrated as targets under related goals. The MDGs and their targets were unevenly achieved by 2015 and the world transitioned to the sustainable development goals (SDGs), increasing from 8 to 17 goals with 169 targets to reach by 2030. WASH was recognized as a critical tool for development hence SDG 6 articulates the need for *ensuring access to water and sanitation for all and is composed of several targets*. Also, SDG 3, *ensure healthy lives and promote wellbeing at all ages*, specifically target 3.8, emphasizes the need for ensuring access to quality essential healthcare services as part of achieving universal health coverage (UHC) for all. In 2015, the Sendai framework was also adopted to promote the development and sustainability of resilient Health Care Facilities (HCFs). This framework targets the substantial reduction of disaster damage to critical infrastructure and disruption of basic services. Healthcare facilities require efficient infrastructure to enhance their resilience to shocks of emergencies whilst providing health services that are robust in the face of stressors (Kieny & Dovlo, 2015). To further operationalize the SDGs and targets set, the UN put out a global call to action in 2018 for WASH in HCFs as part of UHC implementation, especially in LMICs (Guterres, 2018).

Access to safe WASH services is a major challenge for healthcare facilities (HCFs) providing services in developing countries (WHO and UNICEF, 2019). Safe WASH services are a necessity for disease prevention and quality services in health facilities (Sickbert-Bennett et al., 2016). In an attempt to understand how HCFs in low- and middle-income countries (LMICs) cope with inadequate access to safe WASH in the delivery of their services, our research team undertook

a case study in Kisumu, Kenya. In so doing, we conducted key informant interviews (KI) with government and NGO officials to assess WASH in HCF policy landscape. We further conducted in-depth interviews with healthcare workers, and community members in one informal settlement and three rural dispensaries in Kisumu County. Data were analyzed upon return from the field with clear take home messages regarding inadequate measurement and monitoring of WASH in HCFs as part of the UHC assessments thus hindering future planning and budgeting (Abu & Elliott, 2020). Further, a wide range of institutional and ecological factors including limited financial resources, inadequate prioritization, poor monitoring and evaluation, limited human resources, corruption, and poor coordination and consultation - all founded in power and politics – were found to shape access to WASH services in HCFs (Abu et al., 2021). We found frequent disease outbreaks such as cholera and yearly floods further compromised WASH infrastructure and services. Participants expressed varied perspectives on preparedness influenced by the availability of safe WASH services and the efficiency of the health referral system. The majority of research participants indicating plans and provisions for infection prevention and control (IPC) are made available only after disease outbreaks occur (Abu et al., 2021). And then on March 11, 2020, a global pandemic was declared. At the time of writing, over 100 million cases and more than 2 million deaths have been recorded globally (Worldometers, 2021). In the absence of a vaccine, non-pharmaceutical interventions (NPIs), such as hand hygiene, facial coverings, and physical distancing were the only weapons against the virus, weapons unavailable to large proportions of the population in many LMICs, including in SSA (Howard et al., 2020). Indeed, only 60% of the world’s population have access to basic handwashing facilities at the household level (UNICEF & WHO, 2019). The global COVID-19 pandemic continues to shine a spotlight on existing global inequities among the world’s most marginalized populations. These WASH

challenges coupled with other social inequities such as income inequalities continue to amplify the spread of the COVID-19 virus and threaten the existence of many health care facilities even in the global north where health systems are perceived to be more resilient (Jiwani & Antiporta, 2020; Sachs et al., 2020). In the developed world, households living below the poverty line had to be reconnected to municipal water supplies in order to ensure adherence to public health measures at the beginning of the pandemic in the United States of America, 90 cities and states suspended water shutoffs in response to the pandemic (Lakhani, 2020). How can you wash your hands when the water company has turned off your water because you were too poor to pay your bill? Also, an *emergency water is a human right act* was reintroduced in the USA Congress on January 28, 2021, to legally prevent water departments from shutting off water to poor and vulnerable populations during emergencies while also forcing them to turn water back on for households that had previously been cut off (The Washington Post, 2021). In developing countries, there were instances where governments introduced water supply initiatives. For example in Ghana, the governments introduced free water, with costs absorbed by governments during the pandemic (Smiley et al., 2020). This initiative is laudable however, existing water insecurities coupled with piped water implementation and operationalization challenges hindered access to the unconnected and poor populations (Amankwaa & Ampratwum, 2020). The government subsequently introduced a COVID-19 health levy to offset the cost of the free water initiative in 2021 (Republic of Ghana, 2021).

Given the partnerships established in the first phase of our research, our team seized upon the opportunity to return to our key informants on the ground in Kenya to assess what was happening in the face of this global disaster. This natural experiment allowed us to explore in much more depth – although virtually – the experiences of those responsible for providing health care

for marginalized populations in rural Kenya. Researchers have begun to highlight the impacts of the COVID-19 pandemic in communities and health settings in sub-Saharan Africa (SSA). Gilbert et al. (2020) evaluated the preparedness and vulnerability of African countries to the global pandemic against their risk of importation of COVID-19 virus. They concluded that many African countries were ill-prepared to respond to the COVID-19 pandemic. They also classified Kenya as a moderate risk country with variable capacity to respond, yet high vulnerability to the pandemic. Howard et al. (2020) and Wallace et al. (2020) reiterate the negative impacts of the pandemic globally. They emphasize the need for strong empirical research through a social scientific lens that will explore and understand emergency preparedness, build resilient HCFs and healthy communities. Armitage & Nellums (2020) emphasize the need to prioritize people in water-stressed settings in intervention planning and implementation especially in the phase of climate variabilities and the pandemic. However, there is limited empirical research on the impact of the pandemic on WASH in HCFs, HCF preparedness and the communities they serve. To better prepare for recurring disease outbreaks and subsequent threats to global development, we contribute to this literature by engaging key informants (n=15) from our previous research study in Kisumu County government as well as relevant Non-Governmental Organisations (NGOs) to derive alternative measures for addressing preparedness and building resilience through strengthening WASH in HCFs in Kenya and beyond. Following this introduction, we frame the paper within political ecology of health theory and then describe the study context and methods used. Results are followed by the discussion and conclusion that includes recommendations for policy and practice.

5.2 Political Ecology of Health and WASH

Political ecology of health (PEH) outlines the connections between large-scale socio-political and ecological processes within a place and across multiple scales that shape population health and wellbeing (King, 2010). Researchers have drawn on this theory to explore and explain issues of disease, health, healthcare and wellbeing across a range of spatial scales and geographies. For instance, King (2010) used political ecology to investigate the AIDS epidemic in South Africa. In this context, King explored how opportunities for healthy decision-making were shaped by political and economic processes including inadequate health infrastructure. He further illustrated how the transmission of cholera disease as well as the ability of health care agencies to effectively respond in Zimbabwe were shaped by political and economic systems (King, 2010).

PEH also provides an efficient theoretical framing for research on systematic disparities in determinants of health and the forces that shape and reinforce these disparities at various scales (Cutchin, 2007; King, 2010). King (2010) research in South Africa concluded that healthcare access is more constrained among residents of rural and marginalized settings as compared to the urban settings where development was improved. Atuoye et al. (2015) used political ecology of health theory to explore transportation barriers to accessing health care services in rural Ghana. Their research indicated that consistent neglect of infrastructural road development and endemic poverty complicated transportation services and hindered health-seeking behaviours, especially among pregnant women. PEH has informed WASH research with a focus on the exposure risk to contaminated water as well as the health experiences of populations in such places (Sultana, 2006). Hunter (2003) further examined the links between the construction of agricultural dams and a disease outbreak in the Upper East Region of Ghana. Findings from this study revealed that while a combination of political, economic, and social factors were the main catalyst for the construction

of the dams, ecological conditions propelled by inadequate infrastructural planning initiated the subsequent spread of schistosomiasis among community residents within this region (Hunter, 2003). Similarly, Mulligan et al. (2012) drew on political ecology of health to depict the links between the spread of dengue fever and processes of economic transformation and urbanization in Malaysia. In their research, dengue fever emerged and spread because infectious disease management was systematically excluded from mainstream urban planning, governance, and policy. The planners and policymakers responsible for urban development did not incorporate the biopolitical context and inadequately engaged with public health officials on issues of environmental health in urban policy. Within health equity research, Bisung et al. (2015, 2016) through political ecology of health guided research, indicated social, economic and political factors such as privatization of water and scrapping of pro-poor policies by the Kenyan government shaped access to water in Kenya. These factors further constrained social capital and collective action efforts in water provision and were contributory factors to pervasive WASH inequities.

We are guided by the theories of political ecology of health to explore the experiences of relevant stakeholders at different levels of health governance as they navigate and respond to the COVID-19 pandemic. Finally, we employ PEH to understand how the COVID-19 virus spread, how the pandemic is discursively understood and represented by government health institutions as well as how these discourses align or conflict with local understandings.

5.3 Research Context

The first case of COVID-19 virus was recorded on March 13th, 2020, in Kenya. As of May 2021, Kenya recorded over 100,000 cases and almost 2,000 deaths (Worldometers, 2021). Kenya has an estimated population of 48 million and about 80 % of the total workforce rely on the informal sector (Okungu et al., 2019). Many of these people engage in food vending, shopkeeping,

farming, art and craft among others. According to the Kenyan demographic and health survey, the average number of household members is 3.9 (Kenya National Bureau of Statistics, 2014). Also, 46.5 % of the total population live in slums where many household members sleep in one room and lack basic utility services like water (The World Bank, 2021). UNICEF & WHO (2019) indicate 59 % of Kenyans have basic access to water, 29 % have basic access to sanitation and 25 % have basic access to hygiene services at the household level. WASH inadequacy extends to HCFs, where only 66 % of HCFs have basic access to water and 14 % have no sanitation services at all (WHO and UNICEF, 2019). In this context, adhering to the NPIs during the COVID-19 pandemic is a major challenge and contributed significantly to the rapid spread of the virus across the country.

Prior to the pandemic, the Ministry of Interior and Coordination of National Government and National Disaster Management Unit published a national emergency response plan and standard operating procedure in 2014 which targets a wide range of emergencies. To specifically respond to the pandemic, the Ministry of Health (MOH) implemented a Kenya COVID-19 emergency response funded by the World Bank (The World Bank, 2020). A national task force was convened with 5 technical working groups responsible for: coordination; surveillance and laboratory; case management and infection prevention and control; and risk communication and logistics. The Ministry spearheads the purchase of medical supplies to equip health facilities, build the capacity of relevant stakeholder, health systems IPC and case management, safe waste disposal from medical facilities, strengthen community disease surveillance and response to emergencies through community engagement, equip the Kenya National blood transfusion service, as well as project implementation and monitoring. Since the advent of COVID-19, the Ministry of Health has published over seventy COVID-19 related protocols and guidelines that are in line with the

WHO guidelines (Kenya Ministry of Health, 2020). These guidelines provide COVID-19 information and other health indicators such as mental health, non-communicable diseases, nutrition, hospitality, community engagement, occupational health and safety, healthcare services and waste management among others. In January 2021, the Ministry of Health published the Kenya Public Health Emergency Operations Center Handbook, a framework for specifically responding to disease outbreaks and public health emergencies (Kenya Ministry of Health, 2021). Prior to COVID-19 pandemic, Kenya experienced several disease outbreaks and as of 2016, the burden of communicable diseases was lower but still dominated total burden of disease (Achoki et al., 2018). Through this paper, we explore how the pandemic impacts this situation.

5.4 Methods

This paper employs a qualitative case study design to follow up with key informants engaged in the first phase of this research project between May and September 2019. The authors previously engaged key informants (government and relevant NGO officials) on a range of topics including factors and processes shaping access to WASH in HCFs, the role of WASH in responding to emergencies, building resilient health facilities and emergency preparedness. When the world was hit by the COVID-19 pandemic, the authors conducted follow-up interviews with key informants to ascertain their experiences on the impact of COVID-19 pandemic and the role of WASH services in emergency preparedness in the health system and communities. We conducted interviews for this research between August and September 2020 with key informants (n=15). Prior to engaging key informants, the authors sought and received ethical clearance from the University of Waterloo ethical board. The application had to reflect safety COVID-19 measures due to pandemic travel restrictions and social distance measures. We emailed recruitment letters to key informants from the previous field research and subsequently arranged appointments for

interviews after each KI confirmed their interest to contribute to this research. Interviews were conducted virtually, and we designed an interview guide to the scope of the interviews. We explored awareness, attitudes, practises, and impacts of COVID-19 as well as response measures in health facilities and communities in Kisumu, Kenya. All interviews lasted between 20 to 60 minutes. Each interview was recorded with the consent of the participants. Audio recordings were then transcribed and analyzed using NVIVO 12. The themes were deductively developed and are explained in the next section.

5.5 Results

In this section, we present the key themes that emerged from interviews with key informants (KI₁, KI₂, KI₃...KI₁₅) on their views and perceptions on the COVID-19 virus, responses in health systems and communities as well as lessons learnt. Of the 15 research participants interviewed, seven KIs were County government officials and eight were NGO officials. We present a summary of the results in Tables 5.1, 5.2, 5.3 and 5.4. In these tables, we highlighted the COVID-19 responses implemented, the impacts within the county (community members and health system), the barriers to responding to the pandemic at the county level as well as the community level and the lessons learnt.

Table 5:1 Awareness of COVID-19 Pandemic Responses

Themes	No. of Mentions	No. of Respondents, n=15 (%)
COVID-19 Pandemic County Level Responses		
Equipping treatment centers to address COVID-19	38	12 (80)
Community education	33	15 (100)
Training health workers	21	11 (73)
Mobilizing a rapid response team	15	8 (53)
Enforcing the countrywide lockdown	15	8 (53)
Contact tracing	11	6 (40)
Enforcing curfews	11	8(53)

Government financial support	10	6 (40)
Hand hygiene/sanitizing	8	7 (47)
Enforcing responses	5	5 (33)
COVID-19 toll-free centers	4	4 (27)
Practising social distancing	3	3 (20)
COVID-19 Pandemic Communities and Households Level Responses		
Hand hygiene/sanitizing	42	14 (93)
Nose masking	39	15 (100)
Practising social distancing	32	12 (80)
Home-based care for COVID-19 patients	11	7 (47)

5.5.1 Impacts of COVID-19 Pandemic and Response Interventions at the County, Health System and Community Levels.

Table 5:2: Impacts of the COVID-19 Pandemic and Responses

Themes	No. of mentions	No. respondents (%), n=15 (%)
Impacts at the County and HCF Level		
Declined social and economic activities	11	8 (53)
Decline in health system (health indicators and wellbeing)	16	8 (53)
Impacts at the community and Household Level		
Psychosocial stress	25	8 (53)
Job losses	7	5 (33)
Educational challenges	6	4 (27)

The impacts of the COVID-19 virus are unmatched, and experiences vary as indicated in table 2. Furthermore, some response measures (see table 5.1) amplified or resulted in new impacts in Kisumu County. Lockdowns and curfews slowed or shut down economic and other occupational activities as indicated by more than half of the participants (see Table 5.2). Organizations had to alter their work and communication routines:

“So, whether in the urban areas in Kisumu or in the rural villages there is a fair share of the impact of the pandemic, most of the organizations locked their offices, people are working from home, some companies have shut down, laid off staff and this is what has been happening over the last few months”. (KI10)

Not all organizations and businesses could operate from home. A majority of the population relies on the informal system. The decision of some organizations to transition online as the pandemic continues to spread did not come without challenges:

“People had to work from home and therefore communications were not very effective sometimes you don’t get the right information that you need because of network problems”. (KI₁₂)

Key informants expressed their concerns on the impact of COVID-19 on the educational system. The inequities in accessing technology and internet services led to a halt in educational activities. Even though parents spent more time with their children, this affected their productivity working from home.

“I have an asthmatic son, but I was lucky that schools were closed he didn’t have the chance to mix with other children, but it has been a challenge staying with him in the house. You know he has to play and I work”. (KI₁₅)

The health system in Kisumu is experiencing several challenges and COVID-19 virus has amplified these challenges. In table 5.2, key informants (n=8) suggested the whole continuum of the health system is weak. For instance:

“Healthcare facilities lack the capacity in terms of facilities, they lack workmanship in terms of healthcare workers themselves.... We’ve always had the issue of understaffing for a very long time, and this came to light with the pandemic”. (KI₉)

Another critical concern was the decline of other health indicators. A lot of effort and resources are channelled into fighting COVID-19 at the expense of other health indicators:

“We were backtracking in all our indicators in such a short time...so, what is happening is, our health indicators actually if you see our scorecard, we are reading very badly, the gains we had during the last quarter... which was quite impressive we lost all of it at the beginning of the COVID pandemic”. (KI₃)

More prominently talked about are issues of neonatal and maternal mortality and these were attributed to accessing health care due to pandemic response strategies.

“Remember I told you Kisumu is still losing so many mothers, so they are trying to manage COVID-19, sadly we are still losing so many mothers...because of the curfew that was declared by the president, we have a challenge with people accessing care, especially the pregnant women. It’s a bit difficult because if it is past 9 pm, we have police brutality, they choose to stay away from the hospital”. (KI₁₄)

Another concern is the increasing trend of teenage pregnancy which leads to birth complications and has long-term effects especially on girl child education in the county:

“If someone is looking for money to get food and you’re asking them to mask, it’s a bit complicated. Because they can’t afford the mask, the young children the adolescents are getting pregnant because they have to look for money from whatever means, so it’s not very easy for the household”. (KI₁₄)

More than half of the participants mentioned psychosocial stress (see table 5.2) was greatly impacting the health and wellbeing of the residents of the County. A range of emotions were associated with contracting and living with the virus.

“There was also some bit of panic when we started going out to the counties that were getting infections, there was a lot of panic and stigma also for those infected and I think the government should have done a better job with sensitizing people on this whole thing”. (KI₅)

These stresses experienced in health facilities due to uncertainties in case definitions led to the demise of people suffering from other treatable diseases:

“There was a lot of mortality with malaria which were suspected to be COVID cases ...some healthcare workers were not approaching these people, so we even had some mortalities where the healthcare workers thought it was COVID, there was a lot of stigma”. (KI₃)

Financial constraints resulting from declined economic activities also increased psychosocial concerns in families:

“I think we lost some of the lives because there were no jobs, there was no money to buy food, so you think until you burst. So, some people died because of stress, some people just went home, people moved back to rural areas, and even paying the rental for the houses was not easy for people”. (KI₁₁)

5.5.2 Barriers to the Implementation of COVID Responses at the County Level

Table 5:3: Barriers to Implementing and Adhering to the COVID-19 Responses.

Themes	No. of Mentions	No. of Respondents (%), n=15
Barrier to Implementing Response measures in HCFs and County Level		
Inadequate preparedness	39	15 (100)
Structural challenges	17	6 (40)

Enforcement challenges	10	7 (47)
Barrier to Adhering to Response Measures in Communities and Household Level		
Economic challenges	27	12 (80)
Misinformation	24	10 (67)
Inadequate basic amenities	16	8 (53)
Unequal access to testing	10	9 (60)
Untrusted government	7	9 (60)
Unequal access to care	5	5 (33)
COVID-19 pandemic fatigue	5	5 (33)
Climate variability and displacement	4	3 (20)

Table 5.3 indicates the challenges associated with implementing and adhering to COVID-19 pandemic. In this section, we expand on the different barriers to implementing the COVID-19 responses at the County level. All participants (n=15) mentioned inadequate preparedness as a major barrier to adequately responding to COVID-19 pandemic. The COVID-19 virus was first recorded globally in December 2019 and Kenya recorded its first case in March 2020. Key informants stated inadequate preparedness caused widespread misinformation about the pandemic:

“To say the truth, it is very hard to really describe if we were prepared for COVID-19, but what we did was because this is a new virus there is no clear-cutting stone to tell us what we are supposed to do, but obviously we are following areas of the world which were like centers of the epidemic, we looked at the US, Italy, we looked at the steps, they took on the issues of prevention, so we were just following straight”. (KI₃)

Some participants were concerned that the country did not only delay in planning but also was extremely reliant on foreign support:

“The Ministry of Health and other stakeholders in the sector, the government did come up with protocols of managing the pandemic, you know it came as a shock now the government was trying to borrow from other countries and from other established institutions”. (KI₁₀)

Structural and systemic challenges were the second most mentioned barrier (see table 5.3) to responding to the COVID-19 pandemic. Corruption was a major challenge. Amid the pandemic, some officials looted the system by delivering inappropriate protective and hygiene services to first responders:

“That’s where things get bogged down in the procurement process...so we’ve had unfortunately some big scandals. Half of the masks that county governments have proven to be inappropriate and they’re paying 4 times the price. So, on paper the macro-planning looked good, but once you start looking at details you start to see a lot of flaws and we now have a new category of Kenyan’s called COVID millionaires... it doesn’t hold well when the people who are supposed to be responding are being investigated for fraud and corruption”. (KI7)

Prior to the pandemic, healthcare workers frequently went on strike. These strikes continue to happen even in the pandemic due to unmet basic healthcare requirements and enumeration:

“Still, these health care providers continue to go on strike because they’re saying they’re not prepared and they are put on the front line to deal with this pandemic, they’re not supported with the necessary material that they need. This tells you that all that is being reported could just be talk”. (KI5)

A majority of the COVID-19 responses require community members to change their behaviours in ways they are not used to. Enforcing COVID-19 response measures is challenging because there was resistance from the public:

“There was some resistance, most people were like this is not the normal situation of washing hands, so we had to put in some people to enforce such issues, the adaptation wasn’t really bad in the long run, in Kisumu that is a law, so people have been adhering to it. So, I hope that will reduce the number of community transmissions”. (KI3)

5.5.3 Barriers to Adhering to COVID-19 Responses at the Community Level

Community members felt the economic costs of adhering to the rules and regulations were more harmful than COVID-19 disease itself. Table 5.3 shows 12 out of 15 key informants mentioned economic challenges hinder community resident’s ability to adhere to pandemic responses:

“Initially, there was greater enforcement of what people need to do in communities but there’s always that pushback. For example, when they tell people to stay at home, people say OK, so you want me to stay at

home and die of hunger – people say they'd rather die of COVID than just sitting at home and die of hunger". (KI₈)

The misinformation about COVID-19 further decreased the level of preparedness and seriousness attached to the pandemic within communities:

"I think it's because initially a lot of people took this as a foreign infection, I don't know why people felt they were immune to it because maybe the numbers weren't as high, so people were still going around not wearing masks". (KI₅)

The lack of trust in the government by the citizens was further deepened by corruption associated with COVID-19 relief packages or misappropriation of funds with regards to procurement also affected citizens' perception of COVID-19.

"There is a huge number of people who still do not believe in COVID. Now, this could be a ploy from the government to get funds from abroad for some measures so that they can make use of it in a way that they want to". (KI₁)

Access to basic services varies across communities in Kisumu County. Informal settlements (slums) bear the most burden with accessing basic utilities. Table 5.3 illustrates key informants (n=10) mentioned the nature of housing infrastructure, inadequate WASH as well as family sizes make it impossible to adhere to some of the NPIs such as isolating and social distancing:

"In the slums, the people stay in small houses...there is no access to water, there is no space when you ask people to wash their hands, where do they get the water to wash their hands, and the places are so small they share with 6 to 10 people, and so people can't stay in the house the whole day, so I think there are areas which don't have clean drinking water. So, if you don't have clean drinking water, how will you wash your hands when you don't have water to drink. So, hygiene is a problem." (KI₁₅)

There are significant challenges with access to COVID-19 testing. Testing settings and kits are limited. Health workers must prioritize testing to ensure people who need it most have access:

"So, it's really targeted, really targeted, so we're not able to still do the random testing, it has to be overwhelming that you truly have contact and these are high suspicion that you will be positive. Yes, because we don't have test kits, so, we have the KEMRI lab and that takes care of the population" (KI₁₄)

Participants also indicated access to care is not equal as well. The type of facility a person seeks health care in depends on the financial strengths of the person:

“Health care facilities are the first point of care in terms of testing, they provide services for those who develop the active disease itself ... that is where people can get treatment, but it depends on if you can afford the public or the private health care facilities”. (KI₁₄)

Behaviour change takes time to achieve. Some community members still want to engage in old social and cultural greeting practices:

“You see, the African culture is that when you meet somebody, you have to give a greeting with a smile, that social aspect, some can be tempted even to kiss you, hug you because of the happiness of meeting you. So, if they are very close to you, it becomes difficult to restrain them from even coming close to you. And you are told to stay one metre away, so one metre away for an African with our hands shaking that’s a challenge. But we have tried to manage and tell people they should follow that”. (KI₁)

The delays in returning to old ways and the fact that COVID-19 virus seems not to be going away instigated COVID-19 fatigue and some community members stopped adhering to the rules:

“For example, I’ve come to a town called Ludwa, about 300km from the Sudan border. I hardly saw anybody wearing a mask here, although when they heard we were from Nairobi then everybody fished out their masks from their pocket so there’s COVID fatigue that is developing”. (KI₇)

Participants (n=3) mentioned weather extremes such as floods resulting from torrential rainfall displaced some Kisumu residents further compounding their inability to respond or adhere to COVID-19 responses:

“The WASH arm is not very strong I’ve mentioned to you that access to water is a challenge and even Kisumu is worse because we had flooding, so you can imagine with COVID-19, flooding, no water. So, but we’ve had partners coming in like UNICEF who have been supporting, refurbishing wells, we have wells that burst because of flooding. So, for me we still have to improve matters of WASH it is a huge challenge”. (KI₁₄)

5.5.4 Lessons Learned at the County and Community Level

Table 5:4: Lessons Learned

Themes	No. of mentions	No. respondents (%), n=15 (%)
Lessons Learned and Way Forward at County and HCF level		
Invest in emergency preparedness	17	12 (80)
Political will to improve basic services	11	8 (53)
Stakeholder collaboration	9	7 (47)

Invest in long-term/ sustainable projects	4	4 (27)
Invest in context-driven solutions/ Interventions	4	3 (20)
Lessons Learned and Way Forward at the Community Level		
Community activism	4	3 (20)

According to key informants, the COVID-19 pandemic is a wake-up call for all governments, especially in the global south to invest in emergency preparedness, the most mentioned lesson learned is critical to ensuring a thriving system in future disease outbreak situations (see table 5.4):

“I think the government was caught off guard and needs to start establishing a war chest for such future events whenever we have these kinds of things because a lot of the steps that we have taken has taken money away from other sectors or has been taken from loan which we shall have to pay. Dealing with an emergency by borrowing is one of the worst ways to get resources, it would have been good if we had some kind of war chest just for emergencies”. (KI7)

The government needs to invest in improving basic access to utility services like access to WASH services in HCFs and communities. Moreover, participants (n=8) highlighted the need for political will to ensure these basic services are implemented:

“The COVID-19 occurrence has really brought us back to our conscience that the very basic things that we overlook like handwashing go into the core of managing our wellbeing. It is now that the government and others are putting in infrastructure for sanitation, supply of clean and potable water, these are things that ought to have been done much earlier, so I think moving forward, it is now imperative on most governments that they need to look at the basic supplies that their citizens need. (KI10)

“What struck me was how we’re constantly trying to improve water and sanitation and it always seems like such an impossible thing...But it struck me as really interesting because as soon as COIVD came and they talked about handwashing, everybody had handwashing equipment and facility; you can’t walk into a shop without handwashing equipment. We’ve been working on trying to get this even at health facilities.... This struck me as interesting because a lot of things we think can’t be done can actually be done”. (KI8)

Cases of health and wellbeing are cross-cutting and require a wide range of stakeholders to make sustainable and efficient decisions. Key informants expressed the need for collaboration among stakeholders.”

“The national ministry was working alone without involving the counties but later I think they learnt that they need to involve the counties...and any disease outbreaks is not about health only, it requires a multisector approach like COVID what we have learnt like, health will treat, they do preventive measures, we need the police to do enforcement in certain areas, we need the department of water or the ministry of water to supply water, we need also psychosocial support because we have seen the issue of stigma in all this. So, it is not just about health it is about everybody understanding and being on board right from the word go not later because it becomes difficult again”. (KI4)

A collaborative initiative is important in the distribution of response items and donations.

“You will find one area with one particular item more than what they require whilst others are in need. So there should be kind of coordination and every organization or department which wants to supply, they should be taken to the Ministry so they know what to supply so each facility what is relevant so everybody is treated equitably”. (KI12)

Socio-cultural and political economic factors vary across countries. For some participants, the government of Kenya needs to invest in context-specific emergency preparedness measures:

“We are totally reliant on WHO and all the world bodies to give us guidelines but I think sometimes when there is an outbreak of a disease, it depends on the population, the population are different in different regions, you know everybody had their own kind of experience so sometimes I think as managers in the health care sector, we should be able to custom make our own ways to make sure that the population is safe...We are a sort of a copy-paste sort of which sometimes I think it doesn't really work for us especially in Kenya”. (KI3)

Even within Kenya, there is the need to address the different cultural settings:

“So, I think even this dissemination has a cultural aspect to it. I think it needed to be tailored in a certain way to treat people who do not consider WASH or don't take WASH very seriously. It's just because of the environment they live in, and the culture that comes with living in that environment, so I think tailoring it to different communities and not having the same dissemination message for all communities would help”. (KI5)

5.6 Discussion and Conclusion

This research was informed by political ecology of health theory. As such, we explored the perceptions and experiences of key informants previously engaged in the first phase of this research project in Kisumu, Kenya. We investigated the impacts of the COVID-19 pandemic, response measures needed and taken as well as the role of WASH services in HCF preparedness. The County implemented several COVID-19 response measures including lockdowns, social distancing, curfews, nose masking, hand hygiene among others. However, some of these response measures further amplified the impacts of the COVID-19 pandemic. The COVID-19 impacts and

response enforcement barriers at the county and health facility levels influenced community members' health decisions.

From the first field study, research participants indicated facilities were inadequately equipped to respond to unforeseen emergencies due to inadequate basic services including WASH services and cleaning staff (Abu et al., 2021). Also, socio-economic, and ecological factors and processes further compromised quality services in HCFs. In this second phase of the research project, the pandemic further burdened the health system resulting in inadequate healthcare services. HCFs were not appropriately equipped to respond to the increasing number of COVID-19 cases while managing other morbidities. Structural challenges such as corruption in budgeting and purchasing IPC or safety equipment further contributed to health workers' strikes during the pandemic as they were not adequately equipped. Corruption is associated with limited resources in health facilities and consequently leads to poor health outcomes (Stiernstedt, 2019; Witvliet et al., 2013). From this research, corruption affected access to testing and care. The structural challenges at the national and County levels from IPC and safety procurement further fuelled mistrust in the government, disbelieve in the existence of the COVID-19 virus and subsequent enforcement challenges of response measures. The corruption scandals cemented some community members' belief that the pandemic is a hoax and a plan by government officials and politicians to enhance themselves financially. Wallace et al. (2020) indicated public trust in Rwanda's COVID-19 response is high because of Rwanda's efficient, effective, and transparent governance approach and success in combating Ebola from entering the country through its borders in 2015.

At the time of this research, the County recorded a decline in other health indicators. For instance, increasing adverse events for maternal health cases resulted from declined health-seeking behaviours that were attributed to police brutality associated with the enforcement of curfews and

lockdown restrictions. Similarly, Wallace et al. (2020) associated violence with reports of severe punishment with the enforcement of COVID-19 measures for those in violation in countries including Nigeria, Guinea, Kenya, Uganda and Zambia. Critical to issues of maternal and neonatal challenges is the increasing rate of teenage pregnancy. Prior to the pandemic, Onyango & Elliott (2020) in their research in Kenya highlighted the increasing rates of teenage pregnancy due to financial challenges encountered by young girls. The decline in health services and inefficiencies at the county level could increase the risk of other disease outbreaks and health challenges. For instance, the 2013–2015 West Africa Ebola epidemic resulted in greater morbidity and mortality from other diseases than the public health emergency itself (Wallace et al., 2020).

Also, psychosocial stresses impacted the nature of care delivered in HCFs. In health facilities, the fear of cross-infection coupled with misinformation caused the death of some residents with diseases like malaria. Health workers were not adequately prepared with IPC and safety equipment. Similarly, the mental health of health workers in contact with patients was very critical in the response to COVID-19 and they were provided with the relevant care needed in Tanzania, Nigeria and Cameroon (Wallace et al., 2020). At the community level, psychosocial stress was the most mentioned impact of the pandemic. This resulted from the advent of COVID-19, economic challenges from job losses or declines during the lockdowns or stay-at-home orders as well as the stigma of infection. The United Nations Economic Commission for Africa (2020) report indicated mental health decline due to the pandemic and added that several affected people do not have the required care. Financial stability is a critical social determinant of health. From this research, a prolonged decline in economic activities affected community members because majority of the citizens rely on informal sectors where occupations were disrupted. With the onset of COVID-19, the world bank projected a decline in the African economy (United Nations

Economic Commission for Africa, 2020). Also, inadequate basic utilities like water and poor housing structures were critical hindrances to adhering to COVID-19 responses. More concerning is the displacement of some residents along the Lake Victoria area of the county by floods. These floods also disrupted water sources and housing infrastructure.

From this research, several critical lessons should be considered going forward. The national government needs to invest in and integrate emergency preparedness across sectors. Emergency responses should be devolved to ensure efficiency in service delivery. The County governments should prioritize, invest, and expand basic human needs and utility services like WASH services. The political will to invest in improving basic human rights needs such as WASH is very critical to the eradication of the pandemic (Howard et al., 2020). Vaccine rollout have begun in response to the pandemic however, there are indications vaccines alone are not sufficient to eradicate the disease. Also, vaccine supply and uptake in Kenya are uncertain. So, there is the need to adhere to public health protocols and guidelines. Lessons from curbing COVID-19 virus indicate the need for multidisciplinary efforts among different stakeholders including community to ensure a holistic and proactive emergency response plan (Zaitchik et al., 2020). Communities through their leadership should be involved to foster community trust. In this way, local governments will invest in context-driven emergency preparedness strategies. Alhassan et al. (2021) in their scoping review emphasized the ineffectiveness of the one size fit all approach in SSA problem solving. Howard et al. (2020) also emphasized the need for context-adapted and disease-focused approaches that involve diverse stakeholders in preparedness. By implementing context-specific solutions, we can also begin to address social and health inequities. Finally institutional challenges including corruption and inadequate budgeting which are deeply rooted in power and politics were significant challenges to responding to the pandemic. Emergency

preparedness measures should include the legislature, and as well as policy and to ensure continuity and long-term benefits to eliminate actions taken solely during emergencies.

Chapter 6: Discussion and Conclusion

6.1 Introduction

The goal of this dissertation is to explore the socio-ecological factors shaping access to WASH in HCFs and the role of WASH in building resilient HCFs. To achieve this goal, this research employed a qualitative approach to address the following research objectives using Kenya as a case study:

- a. To explore the policy context of WASH infrastructure and services in HCFs.
- b. To explore the psychosocial impacts and coping strategies employed by patients, caregivers, and healthcare workers due to inadequate WASH in HCFs.
- c. To explore the impacts of the COVID-19 pandemic on WASH services in health care facilities.

This chapter presents a summary of key findings from the research and links with the current literature on WASH in HCFs. The chapter further identifies the main contributions of the research as well as limitations and concludes with a discussion of the implications of these findings for policy and directions of future research.

6.2 Summary of Key Findings

This dissertation is made up of three papers (Chapter 3, 4 and 5). **Chapter 3** explores the policy context of WASH infrastructure and services in HCFs in Kenya. This chapter adapts the logical framework, heuristic framework, policy triangle and the WASHFIT conceptual framework to explore the framing of WASH in HCFs in relevant global and country-level institutional documents (policies, legislations, guides, plans and monitoring tools) using Kenya as a case study. Chapter 3 identified several challenges.

First, at the time of the research WASH in HCFs was not covered under a national policy or guideline but was integrated into other health and developmental policies. WASH in HCFs is framed in relation to infrastructural design as well as the significance of WASH in a healthcare facility in documents included in this study. Also, the comprehensive mention of WASH - water, sanitation, hygiene, waste management and environment cleaning -in healthcare facilities was much more pronounced in global documents than national and county documents. The global documents served as guides for national WASH in healthcare facility implementation, however, these are only partially adopted in Kenya. For instance, the national and county-level documents did not mention UHC in line with WASH in HCFs. This is contrary to the global campaign for integrating WASH in HCFs as part of UHC (Guterres, 2018). The Final UHC programme monitoring tool replaced the *Integrated Management Supportive Supervision tool* used by the County and National government to measure and monitor health facilities during the piloted UHC scheme. The new tool further reduced WASH in HCF indicators measured and assessed. The tool did not comprehensively measure all the relevant components of WASH in HCFs. This chapter supports findings in the literature suggesting WASH in HCF data is often not comprehensive (WHO/UNICEF, 2015; 2019). These findings further reveal that, efforts towards the implementation of UHC were directed more towards finance and registration of citizens than the quality of care in HCFs. This lends support to research in LMICs exposing the need for WASH in HCFs to be reflected in national policies, plans and guidelines/standards as well as ensuring specific, measurable, attainable, realistic, and time-bound goals for WASH in HCFs. These findings further support the need to designate actions for specific people or groups to avoid infrequent and inconsistent reporting, and limited contextual data on the quality and quantity of WASH services in HCFs (Anderson et al., 2020:Guo & Bartram 2019).

Findings from this chapter suggest that emergency preparedness and building resilient HCFs at the national level is framed in terms of referral systems, functional emergency teams and the presence of ambulances for patient transportation to referral hospitals. Similarly, the county-level hospital preparedness did not include WASH but included other infrastructural elements (numbers of hospitals with casualty departments, ICU, bed capacity, morgue facilities), human resources (well-trained cadres), disaster emergency kits and medicine stockpiles. Only the Health Act mentioned issues of WASH in healthcare facilities in association with impacts of climate change which pertains to the safety and functionality of WASH services in healthcare facilities. Finally, some national documents mentioned the need for ensuring a safe working environment for healthcare workers but did not clearly define what a safe environment means. According to a report by Development Initiatives (2017), there is no legally binding framework for preparedness at the national level in Kenya. This report also indicates that floods and disease preparedness in Kenya are less coordinated and efficient as compared to drought.

Chapter 4 draws on theories of political ecology of health and a qualitative research approach to investigate the psychosocial impacts experienced and coping strategies employed by patients, caregivers, and healthcare workers due to inadequate WASH in HCFs. First, the findings reveal WASH services and infrastructure in HCFs are inadequate and fragile in Kisumu, Kenya. At the time of this research, there was progress in the provision of safe piped water in HCFs through the County-Kisumu Water and Sewerage Company. However, there were existing challenges regarding poor water quality as well as availability in all HCFs. These findings are consistent with findings by Davis et al. (2019) and Guo & Bartram (2019) from studies of WASH in HCFs in LMIC. Some water samples from HCFs in their studies contained *E. coli* and chlorine residue. Other WASH challenges found in this research included inefficient waste management

systems, inadequate hygiene products and inadequate/no plumbing and placenta pits even in newly constructed HCFs.

Second, socio-political factors underlain by politics and power as well as ecological factors continue to shape access to WASH in HCFs in Kisumu Kenya. A wide range of institutional factors including limited financial resources, inadequate prioritization, poor monitoring, and evaluation, limited human resources, corruption, and poor coordination and consultation were found to shape access to WASH services in HCFs at the county level. This is consistent with Cross et al.'s (2019) research on HCF cleaning and cleaners in LMICs- India, Bangladesh, Zanzibar and the Gambia. They found that inadequate prioritization of hygiene by national governments is reflected in inadequate cleaning equipment and training as well as poor working conditions of cleaners. WASH in HCFs is relegated and supported by international organizations. Furthermore, in this research, new HCFs constructed by Members of the County Assembly (MCAs) who are also development agents with little or no consultation with technocrats at the County level were inadequately equipped with WASH infrastructure further exposes the neglect of quality services in HCFs.

Ecological factors including climate variability (floods and drought) and disease outbreaks (cholera and diarrhea) continue to damage WASH infrastructure and burden the WASH services in HCFs respectively. Even though a health referral system exists during emergencies, the efficiency of the system depends on the availability of staff, basic equipment, and services including WASH which should be provided by the County government. As a result, some participants indicated HCFs were not building resilience for unforeseen emergencies because plans and provisions for infection prevention and control (IPC) are made available only after disease outbreaks occur. James et al. (2020) in their research in Sierra Leone indicated health workers in

peripheral health units identified inadequate coordination and inadequate medical supplies as challenges to the health referral system during the Ebola outbreak.

Participants in the qualitative interviews expressed a variety of emotions about the situation of WASH in HCFs. Despite these challenges, some health workers and community members reported positive attitudes towards the WASH situation in HCFs, because it was better than it had been. Alternatively, some participants felt WASH in HCFs remained inadequate; in addition to infection prevention and control (IPC), WASH in HCFs was perceived as an example to the community, and its availability affected community health promotion where community members are encouraged to practice safe hygiene and refrain from open defecation.

Chapter 5 of the thesis employs a qualitative research design to explore the impacts of the COVID-19 pandemic on WASH services in HCFs in Kisumu, Kenya. The COVID-19 pandemic created an opportunity to conduct follow-up interviews with key informants from Chapter 4 to ascertain their experiences on the impact of the COVID-19 pandemic and the role of WASH services in emergency preparedness in health systems and communities. First, numerous COVID-19 response measures were implemented including, curfews, stay-at-home orders, hand hygiene, nose masking as well as equipping treatment centers to respond to the COVID-19 pandemic.

Findings from this chapter indicate the advent of the pandemic, as well as some restrictions, led to a worsening of health care indicators as well as health and wellbeing of residents of Kisumu. Fear and stigma of contracting the virus as well as the punishment for breaking the curfew and stay-at-home orders negatively impacted health-seeking behaviours leading to an increase in maternal mortality. Ahmed et al. (2020) indicated a reduction in accessing HCFs due to the increasing cost of care during the pandemic, reduced household income as well as challenges in physically accessing HCFs in Bangladesh, Kenya, Nigeria, and Pakistan.

In this phase of the research, all participants mentioned that the health system was not adequately prepared for the pandemic. The health system experienced inadequate access to IPC and safety equipment as well as inequities in access, testing and care. Institutional challenges identified in Chapter 4 were amplified during the pandemic. Specifically, issues of institutional corruption, limited resources and inadequate stakeholder coordination challenges further influenced the spread of the disease. Health workers embarked on strikes in protest of inadequate preparedness and unpaid wages during the pandemic. Findings also suggest these structural failures were contributory factors to enforcement challenges of the COVID-19 responses by the relevant authorities. The corruption scandals, COVID-19 fatigue and misinformation fuelled the notion of the pandemic as a hoax.

Finally, the COVID-19 pandemic shines a spotlight on existing inequalities in Kisumu Kenya. The majority of Kisumu residents work in the informal sector, hence the decline in economic activities affected income and access to basic amenities.

6.3 Contributions

6.3.1 Theoretical Contributions

This research was framed using theories of political ecology of health (PEH) to explore how socio-ecological factors shape patterns of disease, health, health care and wellbeing.

First, this research adds to the literature and answers the call for health geographers to take more assertive roles in contributing to PEH as well as extending knowledge in the inherent spatiality of health care work (Adger, 2001; Crooks et al., 2018). Health geographers have engaged in PEH to explain uneven health care risks and outcomes as well as how power and politics relations are intimately embedded in the processes of health care (Adger, 2001; King, 2010; Crooks

et al., 2018: Pg 88). Employing PEH in this research is important for understanding and expanding knowledge on multiscale (global, national, county) analysis on how access to WASH in HCF is embedded within social networks that are produced, and reproduced, over time (King, 2010). Evidence from chapters 3, 4 and 5 highlights how macro-level factors interact with local environmental risks to generate patterns of quality healthcare services. This research sheds light on contextual factors that simultaneously facilitate and constrain quality health services and HCFs emergency preparedness. Further, integrating PEH into this research helps our understanding of the implications of horizontal relationships among socio-economically differentiated actors within the health system as well as the role of non-state and international agencies in contributing quality care at the county level.

Second, this research extends knowledge and understanding of the conditions that shape disease vulnerability, transmission patterns, and the impacts on social and environmental systems as well as the ability of health care agencies to effectively respond through the lens of the COVID-19 pandemic (King, 2010). The complex intersection of the different structural factors constrained the delivery of quality healthcare services in the research context. This research contributes insights into ways the COVID-19 pandemic amplified structural factors constraining quality care in HCFs as well as the ability of the HCFs to respond. Similarly, this research further enhances the understanding that health is much more than just the absence of disease. Evidence from this research suggests the intersection of determinants of health during the pandemic further underscores the complexities of inequities witnessed between poor and rich or rural and urban areas and the spread of the virus which had a psychological toll on some residents and health workers. Through this, we can understand the ways in which health vulnerabilities, and the opportunities for healthy decision-making, are socially produced over time.

Third, this research extends the knowledge and understanding of the ways in which diseases are discursively understood and represented by government health institutions, and how these discourses align or conflict with local understandings through a political ecology of health lens (King, 2010). Evidence from this research assists in revealing the micropolitics and inequities in power that shape access to information, resources, and opportunities. The structural challenges at the national and county levels further fuelled mistrust in the government, disbelief in the existence of the COVID-19 virus and subsequent enforcement challenges of response measures.

Fourth, this research expands the knowledge in explicating the links between social and environmental systems, how these systems change in response to disease, and how they in turn shape disease management and the opportunities for healthy decision making (Adger, 2001; King, 2010). Employing PEH in this research contributes to understanding how researchers can connect interactions between environmental risks and (re)actions with broader socio-economic factors to understand patterns of environment and health inequalities (Wakefield et al., 2001). As demonstrated in this research, social, political, economic, and ecological factors affect WASH and further compromised the resilience of WASH in HCFs. PEH integrates relations of power with multiscale nature-society interrelationships that are also critical for a public health disaster like COVID-19 and climate variability.

Findings from this thesis are transferable because the conceptual framework provides researchers with the ability to consider how a multiplicity of micro-meso-macro factors within a similar context interact to shape quality healthcare services. The social and economic conditions in most Kenyan Counties are similar and the learnings from this study will apply to most communities facing similar challenges in accessing water and sanitation services. Moreover,

applying this research design in different contexts would offer a unique opportunity to illuminate similarities and differences in the multiscale issues of WASH in HCFs.

6.3.2 Methodological Contribution

This research makes four methodological contributions to literature. First, this research contributes to the conceptualization and measurement of WASH in HCFs in SSA. Though researchers have engaged in WASH in HCF research, this research conceptualizes access to WASH in HCFs through an intensive holistic and systems thinking approach. This research further contributes knowledge to the calls for qualitative research, to identify approaches most effective in reducing infection by providing insights into enablers and barriers of quality healthcare services in LMICs (Cronk & Bartram, 2018). Research on quality health care services in the global south is limited in the geographies of health care literature. Experiences of place is a key concept of analysis in PEH and health geography (King, 2010). Multiple methods/tools were employed to comprehensively examine factors and processes shaping access to WASH in HCFs by engaging appropriate stakeholders across scales while examining WASH infrastructure and services on the ground. Aspects of this thesis adapt the logic framework, heuristic framework, policy triangle and the WASHFIT conceptual framework to explore the framing of WASH in HCFs in relevant global, country and county-level institutional documents. This approach also extends the identification of stakeholders in the WASH sector.

Second, this research provides an effective example of using multiple qualitative research methods in one research project to enhance rigour in research. I engaged in method as well as data source triangulation to enhance the trustworthiness of the research and develop a comprehensive understanding of WASH in HCFs and the role of HCF in building resilient HCFs (Baxter & Eyles, 1997). In this research, I employed in-depth document analysis, community interviews, and key

informant interviews across various levels. This research approach creates an avenue to triangulate research findings and brought to light the different perspectives and experiences along the process of ensuring WASH in HCFs. Further, this process created critical reflection/ probing about some of the practices within the county and HCF level which is an important step for finding sustainable solutions.

Third, this research extends the qualitative case study approach to the connections between basic needs in health care facilities, places and the nature of healthcare services provided. According to Gerring (2004), employing a case study approach in research allows for an intensive study of a small number of instances of a phenomenon to explore in-depth nuances of the instances and the contextual influences on and explanation of that phenomenon to understand a larger class of small units. In this research, I explore a phenomenon (inadequate access to WASH, COVID-19 pandemic), processes (health care institutional process, risk amplification) and a particular place (communities with inadequate access to WASH). Through this research approach, I can corroborate and further explore the concepts of PEH including access and inequality through a longitudinal case study approach. Follow-up interviews with the same key informants contribute to increasing rigour in this research through member checking (Hay, 2016). This research extends the critical role of power and politics highlighted in PEH and how it influences decision-making.

6.3.3 Substantive Contribution

This thesis also offers several substantive contributions. First, this research answers the call to uncover the processes shaping access to WASH in HCFs in SSA (Guo & Bartram, 2019; WHO/UNICEF, 2015). Also, this research contributes to the limited geographies of healthcare literature on quality healthcare by addressing the availability of WASH and its role in quality health services and emergency preparedness. This research also extends knowledge of primary

health care delivery through the experiences of health workers, patients and caregivers. Health geographers have an interest in primary health care facilities often because these facilities are the first point of entry into the large healthcare system (Gatrell & Elliott, 2015). Research in geographies of health sought to understand what access to care means to people in different rural places, what capacities rural places need to support their residents' health and wellbeing and how rural communities can and should be connected to resources (Kearns & Joseph, 1997). Health geographers continue to explore the perceptions and experiences of patients on the significance of primary health facilities in their lives as well as the services provided with respect to waiting time and spatial distribution (Eggleton et al., 2017; Robin A. Kearns et al., 2020). Joseph & Skinner, (2012) have researched on the voluntary sector in responding to unmet needs of rural health care facilities because research has shown that not all facilities are resourced equally, and this has been the situation in the global south. Research on primary health care in the global south reveal the uneven spatial distribution of primary healthcare facilities, uneven distribution of resources with rural areas often neglected, access to and affordability of care. This research extends knowledge and begins to fill the gap on issues of quality of services in HCF with respect to the availability of WASH services.

This research responds to the call to health geographers to expand their view of vulnerability, especially in growing urban populations. Findings of this research add another dimension by comparing the same level of HCFs in an informal settlement in urban Kisumu to rural communities. This thesis extends this field of research by bringing new empirical knowledge on the quality healthcare services, building resilience, emergency preparedness in HCFs and place.

6.4 Implications for Policy and Practice

Research within the field of health geography has since informed policy and practice globally. Access to WASH in HCF facilities plays a vital role beyond quality services in HCFs and extends to community health promotion and public health. Previous research underscores the importance of healthcare services to communities and WASH in HCFs in LMICs (Bartram & Cairncross, 2010; Cronk & Bartram, 2018; Guo et al., 2017; WHO and UNICEF, 2019). The transition from MDGs to SDGs highlights this need and significance of global commitments, resolutions as well as the global call to action of integrating WASH in HCFs in UHC to further operationalize SDG 6 and 3 (WHO/UNICEF, 2019a). The WHO and UNICEF joint monitoring programme on water supply, sanitation and hygiene services (JMP) continues to provide frameworks and guidelines on WASH in HCFs. However, there is limited literature that provides a comprehensively understanding of the processes associated with implementing WASH in HCFs as well as the role of WASH to ensure a resilient HCF at the local level. According to the JMP progress report on WASH, WASH in HCFs and communities fall short in providing supportive mechanisms to ensure national and county government commitments. As indicated in this research, even though there is a growing recognition of WASH in HCFs and communities in Kenya as well as the integration of WASH in other development policies, it is not prioritized, inadequately funded, or given primacy in discussions of policy implementation especially by the national and county government. Within the context of WASH in HCFs, healthcare and place, the findings from this thesis provide possible pathways for ensuring adequate access to WASH in HCF are discussed below.

6.4.1 Strengthening Partnerships

Findings from Chapters 3, 4 and 5 indicate the multisectoral nature of providing quality health care services through WASH in HCFs as well as ensuring emergency preparedness. Providing efficient WASH requires multiple stakeholder expertise and insights from the government (ministry of health, ministry of water, etc.), the local and international NGOs, civil society organizations and community leaders. Yet throughout this research, coordination and collaboration across scales is a major hindrance to accessing WASH in HCFs. For instance, Chapter 4 highlights the coordination challenges among political leaders who are also development agents with technocrats at the national and county government levels. This level of inadequate collaboration and consultation resulted in the sprouting of several health care facilities, mostly maternity facilities but with inadequate WASH infrastructure (plumbing, placenta pits etc.).

Similarly, these findings suggest that health care workers are not adequately included or consulted by the county government in decision-making. In this research, waste management is a major challenge in HCFs. The county government instituted a policy to ensure used sharps (needles, scalpel etc) from HCFs be disposed of appropriately at the County referral hospital with appropriate disposal infrastructure. This initiative meets the requirements of the WHO/UNICEF joint monitoring programme for water supply and sanitation and hygiene standards for waste disposal. However, the county Ministry of Health (MOH) did not take into consideration the challenges associated with safely storing and transporting used sharps. Not all facilities studied had the appropriate storage units and transportation mechanisms which also resulted in extended waste storage periods. The MOH officials need to make WASH services and healthcare decisions in consultation with healthcare workers in these places to minimize their exposure to harm.

Also, NGO organizations need to collaborate effectively to have a common voice to address WASH in HCFs. Chapter 5 of this thesis indicate inadequate collaboration and coordination among donor organization led to the uneven distribution of relief packages in communities impacted by the COVID-19 pandemic. Development Initiatives (2017) in their report suggested stakeholder coordination challenges Kenya's preparedness. Emergency responses are more reactive as opposed to proactive which needs to be improved through a multi-stakeholder approach for a country with a wide range of emergency risks at different times of the year.

6.4.2 Strengthening WASH Monitoring and Measurement in HCF Policy

The results from Chapters 3, 4, and 5, provide evidence that WASH in HCFs is inadequately measured and monitored. There is also the need to develop a national level WASH in healthcare facility guideline which addresses contextual factors of Kenya as well as all levels of the healthcare system in partnership with all relevant stakeholders. This comprehensive tool is necessary to avoid the lapses in the WASH in HCF standards and guidelines. A National WASH in HCF guideline should include the roles and responsibilities of stakeholders to enhance accountability. Evidence from Chapter 3 indicates WASH in HCFs is not adequately measured even through the UHC. There are existing international/global level guidelines that Kenya can adapt to reflect their context-specific needs on WASH in HCFs. A WASH in HCF monitoring tool should reflect or comprehensively measure water, sanitation, hygiene, environmental cleaning, and waste management indicators in healthcare facilities. A WASH in HCF monitoring tool is relevant for effective data collection, planning, budgeting, and implementation of WASH in HCFs.

Enforcing legislation and guidelines is a major challenge in Kenya. Evidence from chapter 3 and 4 indicate that enforcement of policies in Kenya is a major challenge to development. For instance, the need to include WASH infrastructure in healthcare facilities was published in the

National Infection Prevention and Control guidelines for healthcare services in Kenya in 2010. This is again emphasized in the Kenya Environmental and Sanitation Policy, published in 2016. Commitment especially at the national and county levels is necessary to achieve quality care in healthcare facilities. Commitment and prioritization of WASH in healthcare facilities by the country's institutions and leaders will accelerate achieving quality healthcare. Issues of WASH in healthcare facilities should gain equal prominence as issues of financing curative measures in healthcare facilities in the yet to be implemented UHC policy across the country by 2022. For instance, an HCF waste management approach can be included in this policy. Indicators for WASH in healthcare facilities were not adequately presented and this could have impacts on the planning and financing of quality care when the universal health coverage program is fully rolled out in the country.

6.4.3 Strengthening Emergency Preparedness

Emergency preparedness involves the development of national, county and community level or public health emergency response plans for relevant events including biological and natural hazards. Chapters 3, 4 and 5 highlight the need for emergency preparedness in Kisumu County and Kenya given the frequent occurrence of disease outbreaks and climate variability effects. Also, WASH services in HCFs need to be integrated into these emergency preparedness plans.

In Chapter 4, the county preparedness plan did not highlight the need for strengthening WASH in HCFs. Chapter 5 highlights that HCFs in Kisumu are not building resilience to unforeseen emergencies. Health sector workers rely on the health referral system in response to disease outbreaks. However, many HCF workers were of the view that response plans including access to basic services like WASH should be in place prior to these emergencies. The

effectiveness of the referral system depends on the availability of basic infrastructure and services including WASH services and cleaning and medical staff. Evidence from chapter 6 further exposes inadequate preparedness in the phase of the COVID-19 pandemic leading to misinformation, corruption, health workers' strikes subsequently affecting quality care. Evidence from chapter 6 suggests that government and county government officials required the political will to prioritize emergency preparedness to holistically address emergencies. The Development Initiative (2017) also suggests the absence of standard operating procedures for preparedness should be prioritized by the Kenyan government working together with implementing agencies. First, there is a need to dedicate adequate funds to emergency preparedness as well as engage stakeholders across scales to adequately plan because of the intersectoral nature of emergency preparedness. This situation requires paying attention to the social determinants of health and ensuring basic needs like WASH are planned for. Through these plans, stakeholders can effectively map out areas that are vulnerable to emergencies to boost response when needed. The Sendai framework suggests that risk management and emergency preparedness should not be a sector on its own but a practice across sectors (United Nations, 2015).

Also, chapters 3, 4 and 5 suggest the impacts of climate variability on WASH services and infrastructure are not adequately addressed in the health care system. Chapter 5 and 6 highlight that climate variability effects such as flood and drought cause damage to WASH infrastructure and affects the quality and quantity of services in HCFs and communities. In chapter 5, an example of collapsed toilets from torrential rainfall is highlighted which, coupled with accessibility challenges that lead to open defecation which causes water-related diseases through the fecal-oral route. There is the need for appropriate infrastructural design to withstand these weather events and avoid service interruption which is a key priority of the Sendai framework. In early 2021, the

MOH published a Kenya Public Health Emergency Operations Center (KPHEOC) Handbook and a KPHEOC Standard Operating Procedures. The core objectives of these documents include Coordination of the response to emergencies with all relevant stakeholders including county and national government entities and non-government agencies entailing; Collection, collation, analysis, presentation and utilization of health event data and information to guide the response Thirdly, designing appropriate health messages for creation of public awareness, community engagement and social mobilization (Kenya Ministry of Health, 2021). Political will is needed across government levels to operationalize emergency preparedness beyond the publication of SOPs. The Development Initiatives (2017) in their report indicated as of 2014, a Ministry of Interior and Coordination of National Government & National Disaster Management Unit (NDMU), National Emergency Response Plan SOPs and emergency data sources exist however, their usefulness and uptake in decision making could not be ascertained.

6.5 Limitations and Future Research Directions

Despite the many contributions of this thesis, there are limitations, and thus presents some future research opportunities which focus on the measurement, formation, and influence of WASH in HCFs on health care outcomes as well as research design and empirical analysis.

First, at the time of this research, Kenya was piloting UHC in Kisumu. The final universal health monitoring tool for level 2 and level 3 health facilities was the county government operational monitoring tool for HCFs. Chapter 3 of this thesis includes this monitoring tool to adequately explore the policy context of WASH in HCFs in Kisumu Kenya. However, the universal health coverage policy was not available at the time of this study. This is a limitation of this study since I could not comprehensively analyze the framing of quality care and WASH in HCFs as part of the universal health coverage campaign in the country. However, access to the

UHC final monitoring tool highlights the indicators of UHC prioritized during the piloting phase and critically for the finalization of the UHC policy in the country.

Also, this thesis predominantly adopted a qualitative research design. A qualitative research design allows for an in-depth and intensive research approach to understand how process shaping access to WASH in HCF, experiences and (in)actions taken in ensuring access to WASH in HCFs exist. As a result, I relied on self-reported information to achieve the goals of chapter 4 and 5. In addition, a qualitative case study limits the generalizability of the findings. To minimize these effects, I employed multiple methods, different groups of stakeholders and follow-up interviews to enhance the credibility and transferability of this research. Future comparative research in a similar or contrasting context will help ground the current findings and offer further explanations. I recommend future research explores a mixed-method study to draw on the complementary role of both quantitative and qualitative data sources to enhance insight into the patterns and potential associations between WASH in HCF, emergency preparedness and power and politics (Warshawsky, 2014; Elliott, 1999). This research underscores the importance of place in accessing quality health care and uncovers several related areas for future research.

Third, this research was conducted in dispensaries in rural and informal settlements which are level 2 facilities within the health care system. These types of facilities are run by clinical officers and provide preventive, out care services, pharmacy, laboratory, antenatal and post-natal services. This research did not fully capture the WASH in HCF experiences of healthcare workers in other levels of the health structure. Key informants engaged in this research provided snippets of WASH situations in higher-level HCFs. Future research should engage multi-level HCFs in different counties to tease out the differences in WASH in HCFs as well as quality care along with

many other place-based dynamics. This would go a long way in enhancing knowledge surrounding the needs HCFs (Baxter & Eyles, 1997; LeCompte & Goetz, 1982).

Some in-depth interviews were conducted in Kiswahili and Luo, the two dominant local languages spoken in Kisumu. I am not fluent in either language and I relied on expert translation of all interview guides, information letters, consent forms, training manuals and questionnaires through my research assistant. However, this did not affect the quality of the data. I engaged in member checking to enhance rigor and credibility of the results. Prior to the interviews, I conducted community and HCF surveillance to engage community members in order to adequately understand the context of the communities. Also, all interviews were recorded and transcribed verbatim. In addition, all the audiotapes were cross-checked with the transcripts before analysis to correct any errors and fill any gaps that may exist. Further, adequate field notes were kept and account of behaviours and activities during interviews to aid in the analysis. Also, the research team and partners translated the interview guides before data collection.

Finally, this thesis uncovers issues of water quality in HCFs and potential HCF infections through interviews. My engagement with KIWASCO revealed water is treated according to the WHO guidelines and safe for drinking. This research was unable to explore and test the biochemical components of water available in the HCFs studied. Future research can incorporate water quality analysis to further explore the quality of water in storage systems versus the sources. This will also explore and unveil water management plans and strategies employed in HCFs.

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Appendices

Appendix A. Interview Guide

Interviews (patients/caregivers) checklist

Topic: Water, Sanitation and Hygiene (WASH) for resilient healthcare systems

Purpose: To explore the experiences, coping strategies and psychosocial impacts of the lack of WASH in healthcare facilities		
Construct	Question	Probe
Socio-demographic	Can you please tell me about yourself?	How old are you?
		What is your profession?
		How long have you stayed in this community?
Context	Why are you at this healthcare facility?	Are you a caregiver or a patient?
	Why did you choose this healthcare facility over other healthcare facilities?	Because of proximity, quality service or finance or infrastructure? How far did you have to travel?
	What are some of the challenges you face in this healthcare facility?	
	What is the situation of WASH in this healthcare facility?	Source of water within HCFs number of usable toilets Separate toilets for staff, men, woman and aids menstrual hygiene management needs Easily accessible WASH facilities Functioning handwashing systems (5m from toilets/ point of care)
		Do you think access to WASH in healthcare facilities is important?
Experiences and perceptions of WASH in healthcare systems	What is your view on the Water, Sanitation and Hygiene in this HCF?	Have there been changes over time? Which aspects have changed?

		What do you think accounts for these changes?
	What is your experience with lack of access to WASH in this HCF?	
	How do you cope with the situation of lack of access to WASH in the HCF?	Who provides WASH services for you?
	How does that make you feel?	
	At what point in time have the situation of lack of access to WASH worsened?	Weather extremes, conflicts or disease outbreaks?
	Have there been a disaster or crisis in recent time?	When was the last time a disaster occurred? What type of disaster was it? <ul style="list-style-type: none"> • Climate related (drought or flood) • Disease outbreak (cholera)
	How was the disaster controlled?	What role did the HCF play?
	What is your experience with access to WASH in your own home/ community?	
Way Forward	In your opinion what are the challenges affecting access to improved WASH in HCFs?	
	How do you think this situation can be resolved?	Is WASH in HCFs a priority for the country?
	Are there any other issues you will like to share with me?	

Key Informant (HCF management) checklist

Topic: Water, Sanitation and Hygiene (WASH) for resilient healthcare systems

Purpose: To explore the experiences, coping strategies and psychosocial impacts of the lack of WASH in healthcare facilities		
Construct	Question	Probe
Socio-demographic	Can you tell me about yourself?	How old are you?
		What is your profession?

		What is your current position in this institution?
		How long have you been working in this healthcare facility?
Context	What is the situation of the WASH in this HCFs.	What is the current state of WASH
		Source of water within HCFs number of usable toilets Separate toilets for staff, men, woman and aids menstrual hygiene management needs Easily accessible WASH facilities Functioning handwashing systems (5m from toilets/ point of care)
		Have there been changes over time? Which aspects have changed?
Experiences and perceptions of WASH in healthcare systems'	What is your view on the Water, Sanitation and Hygiene in this HCF?	
	What are the impacts of lack of access to WASH on you?	
	What do you think about cross infections and diseases acquired in HCFs?	
	How do you cope with the situation of lack of access to WASH in the HCF?	
	How does that make you feel?	
Climate variability and disease out breaks	Have there being any disasters or disease out breaks?	If yes, what type of disaster/disease outbreak was it? How did it happen and how were you affected?
	Do you have an emergency plan during disasters?	How prepared is this healthcare facility to respond to disasters? Are you building resilience for unforeseen emergencies?
	What role did the healthcare facility play during the disease outbreak?	

	Which component of WASH is critical to ensure a resilient healthcare system?	
	What do you think are the roles of WASH in healthcare facilities?	
Policy implementation and Key stake holders	Is WASH in HCFs a priority for the country?	
	Who is responsible for the providing WASH in the healthcare facility?	What is the role of your institution?
	Who and how are responsible for managing and maintaining the WASH facility?	How are you involved in Managing WASH in this healthcare facility?
	Are there any policies/legislations that stipulate WASH in healthcare facility?	Are there any new policy directions to help improve access to WASH in healthcare systems?
Way Forward	In your opinion what are the challenges affecting access to improved WASH in HCFs?	
	How do you think this situation can be resolved?	
	Are there any other issues you will like to share with me?	

Key Informants/ Government/ NGOs

Purpose: To explore the experiences, coping strategies and psychosocial impacts of the lack of WASH in healthcare facilities		
Construct	Question	Probe
Socio-demographic	Can you tell me about yourself?	How old are you?
		What is your profession?
		What is your current position in this institution?
		How long have you been working in this institution?
Context	What is the situation of the WASH in this HCFs?	What is the current state of WASH
		Source of water within HCFs number of usable toilets Separate toilets for staff, men, woman and aids menstrual hygiene management needs Easily accessible WASH facilities Functioning handwashing systems (5m from toilets/ point of care)
		Have there been changes over time?
		Which aspects have changed?
Experiences and perceptions of WaSH in healthcare systems	What is your view on the water, sanitation and Hygiene in this HCF?	
	How do you cope with the situation of lack of access to WASH in the HCF?	
Climate variability and disease outbreaks.	At what times is the impact of lack of WASH in HCFs worse?	During emergencies?
	Have there been any emergencies in the past?	
	Which component of WASH is most critical to ensuring resilience of HCFs	
Policy implementation and Key stake holders	Who is responsible for the providing WASH in the healthcare facility?	Who and how are responsible for managing and maintaining the WASH facility?
	Are there any policies/legislations that	

	stipulate WASH in healthcare facility?	
	What has your office done so far to address the challenge of lack of WASH in healthcare facilities?	Have you engaged in activities like campaigns, funding, training?
Way Forward	In your opinion what are the challenges affecting access to improved WASH in HCFs?	
	How do you think this situation can be resolved?	
	Are there any other issues you would like to share with me?	

Appendix B: Follow-up Key Informant Interviews Checklist

Topic: Water, Sanitation and Hygiene (WASH) for resilient healthcare systems

Purpose: To explore the experiences and response plans to COVID-19 in the Kisumu County		
Construct	Question	Probe
Socio-demographic	So how have you been since we last talked?	Has your profession/rank/organization changed since our last interview?
		How is your health/family health /community health?
Context, Experiences and Perceptions	Tell me about your experiences with COVID-19?	What is COVID-19? What do you know about COVID-19?
		Where did COVID-19 come from?
		Why is COVID-19 here?
		What are the environmental factors affecting the transmission of the virus?
	What is pattern and rate of infection of COVID-19?	Which group of people are most affected and why?
		How is testing and access to care?
	How prepared do you think you were for COVID-19 pandemic?	How prepared was the nation? How prepared are the HCFs? How prepared was Personal/family/community?
	Is there a response plan for COVID -19 and what does it entail?	What measures are in place by the country to mitigate and manage COVID-19?
		How effective is the response plan/intervention?
		What role does the HCF play? Rate the response plan
	How is your organization contributing to the response of COVID-19?	Does your organization have a different response plan other than the government's?
		Does your organization assist-financially, educate, provide infrastructure or human resource?
What are some of the challenges associated with the response plan?		

Way Forward	From your perspective, what are the lessons learnt so far and what should be done differently in the future during a disease outbreak or a disaster?	
	Are there any other issues you would like to share with me?	