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# Health Education Needs for Mortality Surveillance in Machakos County, Kenya

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# Abstract

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by

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MSc, Leeds Beckett University, United Kingdom, 2009

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Health Education and Promotion

Walden University
February 2023

# Abstract

Reporting mortality information is the primary data source from which evidence can be drawn to monitor disease trends and inform public health policy to improve population health. Still, only two-thirds of expected annual deaths are reported globally. Health education and promotion play a significant role in empowering communities to uptake public health services such as mortality surveillance. This qualitative descriptive study aimed to understand health workers' (HWs') perspectives regarding the need for health education to support mortality surveillance in Machakos County, Kenya. The capabilities, opportunities, and motivation for the behavior change model guided the study. Semi-structured interviews were used to collect data from 10 participants based on their involvement in death registration activities, training as HWs, and participation in health education activities. Findings from coding and thematic analysis indicated formal education and training about death registration were rarely or never provided to community members or HWs, who learned about mortality surveillance on the job. Opportunities for educating community members about the importance of death registration healthcare tasks were reported. HWs who attended community meetings were allowed time to talk to people regarding the significance of registering their dead. Death prevention was the strongest motivation for reporting deaths. The findings indicated the need for a curriculum and educational material for healthcare workers and communities on the importance of mortality surveillance. Findings may enable the Machakos County government health department to enrich HWs' training by integrating health education on mortality surveillance.

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# Chapter 1: Introduction to the Study

Mortality surveillance is a process of collecting information on death, including name, age, sex, and cause. The collected information forms the basis of a data source from which evidence can be drawn to improve population health (Lopez et al., 2020). The information generated from mortality surveillance informs governments of how well their public health interventions are working and where there is a need for urgent action (Lopez et al., 2020). Health workers (HWs) play a vital role in delivering health education to promote population understanding of the concept of mortality surveillance and its critical role in enhancing public health. However, little research exists concerning the role and capacity of HWs to deliver health education on mortality surveillance (Aseyo et al., 2018).

Only two-thirds of expected annual deaths are reported globally (World Health Organization [WHO], 2018b). When a large proportion of expected deaths are underreported and related causes are not documented, governments cannot design effective evidence-based health interventions and measure their public health impact (Lopez et al., 2020). In 2018, the United Nations (UN) revealed that death registration coverage across the world is low compared to birth registration. According to Smith et al. (2017), the reported success of high birth registration rates has been driven by effective health education interventions that promote knowledge to overcome birth registration disparities.

Despite the evidence of the impact of health education on birth registration, there is limited information on how health education interventions can create demand and promote knowledge about death registration’s public health importance (Maduekwe et al., 2017). For example, in Kenya, the general population lacks access to sufficient health education interventions to enhance death reporting efforts and improve local public health efforts (Smith et al., 2017). As a result, Kenya, like many other developing parts of the world, faces the challenges of achieving complete death registration (Maduekwe et al., 2017; Smith et al., 2017).

I explored the needs related to health education on the public health importance of death registration in Machakos County, Kenya. Knowledge generated from this research may be used to design health education interventions to create demand for death registration based on existing capabilities, opportunities, and the motivation of HWs. This study’s potential social implications include strengthening knowledge of death registration’s public health importance and contributing evidence for measuring the impact of public health interventions. In Chapter 1, I address the study background, problem statement, study purpose, and research questions. Other parts of this chapter include the theoretical framework, key definitions, assumptions, limitations, and a chapter summary.

## Background

Mortality surveillance involves the process of notification and registration involved in declaring death and recording the specific cause (UN, 2018). This function, comprising the first source of public health surveillance data on mortality, remains an essential tool for health surveillance today in developing countries such as Kenya (Jennifer et al., 2016). When viewed collectively, mortality data can help uncover health disparities and inform health education development, policy, and planning (English et al., 2018). When deaths go unreported and the causes of death are not accounted for, governments can neither design effective public health education programs and policies for the population nor measure their impact.

Despite ongoing technological improvements and infrastructure investments to support death registration (AbouZahr et al., 2015; de Savigny et al., 2017; Jennifer et al., 2016), the coverage and completion rates remain low in Kenya. According to the WHO's African regional office (as cited in Garenne et al., 2016), most developing countries should have a death registration coverage of above 80% for the data to be considered complete and reliable. In Kenya, the coverage rate for death registration is only 46%, well below the international standard (Garenne et al., 2016; WHO, 2018). Such low coverage makes it difficult for the country to forecast health resources in planning investments in health programs, contributing to inequities in health care access and poor health outcomes.

WHO (2018) reports have indicated potential reasons for the low level of death registration. Some of the highlighted issues from community perspectives include the lack of communication between death registration service providers and health care systems, including the general population (de Savigny et al., 2017). In a 2019 study, Oung et al. described the need for innovative mechanisms to motivate individuals and families to register deaths. The researchers further suggested addressing the role of the public in death registration by ensuring that systems adopt a respectful environment to avoid adding to the difficulties that families experience at such times by informing them of the importance of death registration. On a related note, the WHO (2018) emphasized the critical role of HWs in providing services for death registration.

Little information was available on health education programs to help the public understand the importance of the death reporting process. Couper et al. (2018) described most training curricula for HWs as disease oriented with minimal focus on death and its significance in public health. Furthermore, most health education and promotion schemes focus on health and well-being, but afterlife issues such as death registration receive less attention in health education efforts (Langer et al., 2018).

Kenya has implemented several policy initiatives to increase death registration coverage and efficiency as outlined by the 5-year strategic plan and the death legislation framework (The Birth and Death Registration Act, 2012). Nevertheless, the demand remains low despite these attempts (Mucheru, 2018). For example, in the recent initiative for a one-stop-shop approach involving the National Integrated Identity Management System, the numerous misconceptions from different levels of the communities indicated a significant gap between the public perception and the civil registry services (Mucheru, 2018). Furthermore, the growing need for human-centered service delivery has created a considerable desire to involve the public in designing death registration systems.

These efforts generally follow the argument that increased access to registration services and, more vitally, improved public awareness of registration’s importance is critical for enhancing death registration coverage (Jackson et al., 2018). However, even with targeted infrastructural and educational interventions, the number of unreported deaths in Kenya remains high, at 46% of the expected annual crude death rate (WHO, 2018).

The low rate of death registration in Kenya highlights the need to understand why families do not register their deaths despite the vital importance of death data for public health improvement (Munos et al., 2015). According to Nichols et al. (2019), a lack of knowledge of the critical factors that motivate the public to report and register deaths can contribute to low rates and incomplete death registration. Further consideration of the essential messages that encourage families to register deaths is necessary.

Knowledge gaps concerning the importance of death registration in the general population comprise significant barriers to improving death registration coverage and completeness (Nichols et al., 2019). According to Boateng et al. (2017), several models have outlined the role of knowledge in behavioral health changes, including the capability, opportunity, and motivation (COM-B) model. These models posit that knowledge improves compliance and have led to engaging populations in uptake and active participation in delivering health services (Boateng et al., 2017). Although health service delivery may differ from death registration in content and viewpoint, both are essential public health services, emphasizing the necessity of appraising individuals' beliefs, views, and attitudes to guide behavioral change (Izudi et al., 2019). Implementing any health education and promotion program depends on context-specific information regarding knowledge, awareness, and perception of the targeted population (Owek et al., 2016).

## Problem Statement

Although considerable progress has been made to focus global attention on mortality surveillance's public health importance, more than two-thirds of expected deaths globally continue to remain unaccounted for (WHO, 2018). According to Jackson et al. (2018), recent attention has focused on enhancing governance and comprehensive death registration processes. However, addressing health education that empowers and motivates communities to register deaths has received little attention. Furthermore, many studies on death registration and mortality surveillance have focused on quantitative measurements of mortality data while neglecting to examine how well the community members are informed and what factors influence their decision to register deaths (Joos et al., 2016). Suthar et al. (2019) documented that both service delivery and demand creation through health education were critical success factors, but the study did not focus on how the public could be motivated to participate in death registration services. In comparison, Fastring et al. (2017) suggested that health education would be one way to increase the population's knowledge of the importance of death registration, creating opportunities to motivate individuals and communities to make informed decisions based on the perceived public health benefits of death registration.

According to Nichols et al. (2019), for communities to acknowledge the public health importance of death registration, members must be aware of the benefits related to registering deaths. As the only way to achieve a satisfactory level of awareness, continuous health education is critical. Nichols et al. emphasized that knowledge and understanding of death registration's importance are essential in implementing effective mortality surveillance. Illustrating the need for better awareness in Kenya, Smith et al. (2017) reported that among families who experienced death in the previous 10 years, only about one-quarter (26%) had the death reported for the compilation of vital statistics. Smith et al. showed that Kenya’s general population does not pay attention to registering deaths even though the services are available. As posited by Fastring et al., (2017), uninformed communities are likely to perceive essential services as nonessential, illustrating the need for adequate health education interventions to enhance their knowledge of the public health benefits of mortality surveillance. As in many other developing countries, Kenya’s government faces the challenges of achieving complete death registration (Smith et al., 2017) due to insufficient health education interventions publicizing mortality surveillance benefits.

Evidence on the knowledge and awareness levels related to factors that promote or impede death registration in Kenya is scarce (Nichols et al., 2019). To understand this knowledge gap on these factors and their impact on reporting efforts, I conducted this descriptive qualitative study by applying the COM-B model (see Barker et al., 2016). I explored the perspectives of HWs regarding health education interventions on death reporting among rural communities in Machakos County, Kenya. This study’s findings may inform community education interventions to create awareness of the importance of death registration.

## Purpose of the Study

In this descriptive qualitative study, I sought to understand health education needs regarding the public health significance of death registration to guide the design of health education interventions based on existing capabilities, opportunities, and HWs' motivation. The study contributes to the literature on death registration by examining HWs' perspectives while exploring knowledge gaps regarding the importance of death registration (see Owek et al., 2016). The emerging practice of a human-centered design for public health interventions is an example of how this study's outcomes may provide significant contextual evidence to integrate health education into efforts to improve death registration.

My study's central aim was to understand how health education and awareness activities are integrated to enhance mortality surveillance's public health utility. My research generated information that may be used to strengthen links between communities and death registration systems through effective community-centered health education on the topic (see Esamai et al., 2017). The identified knowledge gaps may be used to inform the development of appropriate health education messages to increase community awareness and participation in death registration activities in the future. HWs were the key study participants because they play an essential role in engaging communities in death registration. Moreover, given the sensitivity surrounding death, their perceptions can significantly influence communities' actions regarding death registration (Nichols et al., 2019).

## Research Questions

My study contributed to the body of knowledge concerning improving health education related to death registration's public health importance to enhance completeness in death registration. The main objective was to fill gaps in health education on mortality surveillance. I adopted the following research questions:

RQ1: What health education resources are available to HWs regarding death registration in Machakos County, Kenya?

RQ2: What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya?

RQ3: What motivates HWs to report deaths and underlying causes in Machakos County, Kenya?

## Theoretical Framework

The theoretical framework for this study was based on the COM-B model, which is a comprehensive behavior change model developed by Michie et al. (2011) to guide the understanding of target behavior to design effective interventions. Barker et al. (2016) referred to the model’s three constructs (capabilities, opportunities, and motivation) as the critical components for behavior change. The model postulates that practicing a new behavior (B) will depend on having the physical and psychological capabilities to use social opportunities and different motivators.

The COM-B model provides three domains in which behavior can be understood: capability, opportunity, and motivation. According to Aimee et al. (2019), the interaction of capability, opportunity, and motivation is the key driver for adopting a new behavior. Although the model had not been used to study characteristics of the death registration process, it underpinned issues affecting the uptake of death registration services across different community groups whose capabilities, opportunities, and levels of motivation vary. In my study, the behavior of interest was the knowledge of the public health significance of mortality surveillance that motivates communities to collaborate with a registration office to support mortality surveillance. I used the interaction between the three components of the COM-B model to understand necessary additions to health education on death registration in Machakos County, Kenya.

According to this model, achieving the goal of engaging behaviors will entail equipping individuals and communities with health education opportunities and an enabling environment that motivates them to perceive death registration as a crucial part of public health care (Barker et al., 2016). Along the same lines, McDonagh et al. (2019) and Barker et al. (2016) described how health education could improve individuals' knowledge and capabilities in terms of opportunities and thereby motivate them to perform the desired death registration practices. The model has been applied to study multiple health behaviors at individual and organizational levels (Rubinstein et al., 2015). The model is at the core of the behavior change wheel (BCW), which offers a framework for designing behavior change interventions (Barker et al., 2016). The three primary constructs of the COM-B model, which map on to the BCW and the behavior change technique taxonomy, facilitate intervention strategies that address the various components, barriers, and facilitators (Barker et al., 2016). Many qualitative researchers have used this model to generate a starting point for developing health education interventions (Rubinstein et al., 2015).

The application of COM-B to the factors associated with death registration enabled me to develop a coherent framework for understanding HWs' perceptions of death registration in their local communities. The model further guided the identification of appropriate interventions to motivate HWs to engage individuals and communities regarding the public health importance of registering deaths, thereby increasing the completeness of death registration (see Graham-Wisener et al., 2022). The model has been applied in various contexts to characterize behaviors and identify potential health education programs on sexually transmitted diseases and health-care-seeking behaviors (McDonagh et al., 2019). Aimee et al. (2019) also reported its useful application in implementing health education programs concerning health-care-seeking behavior and developing capabilities, opportunities, and motivation for care providers to engage with mothers on infant feeding behaviors.

I used the COM-B model to explain potential health education interventions on death registration. According to Barker et al. (2016), the COM-B framework of behavior change provides a systematic way of analyzing behaviors and identifying potential interventions to bring about change. By following this framework's various steps, I determined knowledge gaps to create possible health education programs to address identified challenges.

## Nature of the Study

In this descriptive qualitative study, I used the COM-B model to explore and describe the need for health education to promote death registration based on HWs' experiences, beliefs, and behaviors. Creswell (2017) described qualitative studies as significant information-rich instruments for generating new ideas. Furthermore, qualitative research allows identifying and describing a problem by focusing on information-rich data while avoiding overreliance on quantity or sample size to generalize findings (Creswell & Poth, 2018). Qualitative methodology was the best fit for the nature of my study phenomenon. This approach allowed me to explore the study topic deeper by interviewing HWs in their natural setting, thereby obtaining a more profound understanding of the meaning they attach to death registration and their everyday experience. Qualitative methodology guided my study to improve death registration (see Creswell, 2017; Creswell & Poth, 2018).

The qualitative design enabled the analysis of meanings and experiences attached to the registration of deaths to improve public health. Burkholder et al. (2016) asserted that choosing the appropriate research method is essential for research integrity. Creswell and Poth (2018) noted three standard research approaches: quantitative, qualitative, and mixed methods. The choice of methods is determined according to the type of data needed to answer the research question. The kind of data needed to answer my research question was textual; therefore, I adopted a qualitative descriptive approach to answer my research questions. This research approach provided guidelines for describing and interpreting how HWs experience the study phenomenon, particularly with low death registration rates (see Creswell & Poth, 2018; Mantulak & Nicholas, 2016). The technique provided a flexible structure to describe a phenomenon or understand it from the HWs’ death registration experience. These interpretive descriptions could then be used to inform health education practice in death registration.

As described by Creswell (2017), I used purposive sampling to recruit a sample of 10 HWs in Machakos County. I conducted individual semi-structured interviews with the participants to collect data following my interview guide. The inclusion criteria to participate in the study were based on the health education role of HWs, and a snowball sampling approach was used to contact others based on the current participants' recommendations.

An interview protocol was developed to assist with data collection (see Oxley, 2016). Data were collected using open-ended questions to encourage the participants to describe their feelings and perceptions about experiencing the study phenomenon. All data collected through these interviews were primary qualitative data. Creswell (2017) noted that qualitative data collection tools should be structured to allow the researcher to gain deeper insights into the study topic. I, therefore, developed an interview guide to ensure I remained focused during the interview sessions. All interviews were recorded and transcribed for analysis. Creswell and Poth (2018) also suggested that other materials respondents might provide could explain qualitative research phenomena. Therefore, during interviews I requested other materials that the respondents could make available, such as journal entries, drawings, or other audio or visual documents. Additional material was collected by making copies from the respondent. Data analysis involved thematic analysis of the responses to open-ended questions. Data were analyzed using NVivo Version 12 software.

## Definitions

The following terms and their descriptions were used in my study:

*Baraza:* This term is derived from Swahili language, meaning public meetings. They are usually organized by community leaders at different levels to discuss matters of wellbeing, plan communal work and update on events happening in the community. In this study, baraza's were used to describe public gatherings used by HWs to conduct health education.

*Civil registration and vital statistics (CRVS)*: This term describes the routine and continuous process for registering all births, deaths, and other vital events as defined by the local laws. The World Bank (2018a) defined CRVS as a foundational system for the population registry whereby the human cycle of life events is tracked from birth to death, forming a source of legal documents for birth and death. In the current study, CRVS was part of the systems that document deaths.

*COM-B model*: I used this model to understand mortality surveillance health education needs in three domains (capabilities, opportunities, and motivation). *Capabilities* referred to health education's impact on enabling individuals or a community to engage in thoughts or physical processes necessary to act. *Opportunities* were factors or social settings that facilitated the action based on knowledge and skills introduced through health education. *Motivation* was the reflective or automatic beliefs and emotions triggered by health education messages concerning the public health importance of mortality surveillance that drove HWs' desire to deliver health education on mortality surveillance.

*Death notification*: This term has been used interchangeably with death registration. However, this action comprises the first step that triggers the process of death registration. According to Joos et al. (2016) and Mikkelsen et al. (2015), deaths notified may not be registered. In my study, death notification implied reporting the occurrence of death events for surveillance purposes.

*Death registration*: This procedure is the formal and legal process of acknowledging the occurrence of a death, thereby forming the crucial task of ensuring documentation and cause of death information for vital statistics production (Garenne et al., 2016). When all deaths are registered, data on mortality can be compiled and analyzed for evidence-based public health policy planning and tracking of the impact of health interventions. Health education can help the government improve death registration services by informing the public about its vital contribution to public health.

*Health education*: This term describes a combination of learning experiences designed to help individuals and communities participate in health improvement efforts. According to Ghaffari et al. (2018), health education is an intrinsic and inseparable health promotion component in helping individuals control their health. I used this term to describe learning experiences essential for promoting death registration.

*Health workers (HWs)*: Many definitions of HWs exist; some label these individuals as volunteers and other formal health agents based in the community or health facilities. Gatuguta et al. (2019) and Aseyo et al. (2018) described HWs as frontline workers with close ties to the communities they serve. For the current study, HWs were the physicians, nurses, or public health officers based in the community or at a health facility with health education and reporting responsibilities.

*Mortality surveillance*: This practice is used to collect all-cause death information to measure health outcomes and impacts on the public health care system (Sifuna et al., 2018; Smith et al., 2017). The procedure is implemented for various reasons to generate evidence for planning. Although mortality surveillance does not directly result in the formal registration of deaths, the information collected can be used to trigger the registration process. In my study, this term implied the systematic collection of reports of all-cause deaths to generate evidence-based public health interventions.

*Vital statistics*: This term describes the data compiled and analyzed concerning vital population events such as birth and death (United Nations Statistics Division [UNSD], 2018). These data are generated by the civil registration systems. Mortality data comprise one of the data elements that form vital statistics. In my study, vital statistics referred to death data that were part of the country’s broader vital statistics.

## Assumptions

The first assumption was that my study participants, HWs, would freely provide rich, in-depth descriptions of their experiences providing health education as part of their routine work (see Creswell, 2017). I expected that they would be truthful and open in their responses, giving detailed information that would be used to understand my study phenomenon. Furthermore, as described by Creswell and Poth (2018), because I was the principal instrument in my study, I discussed my personal feelings and biases regarding my study phenomenon. I assumed this approach will facilitate credible discussion about my study participants’ views when answering my research questions. Finally, I assumed that a qualitative descriptive approach was the most appropriate means to generate new knowledge of my research phenomenon.

## Scope and Delimitations

My study was limited to HWs engaged in health education activities either as volunteers or individuals formally employed by the Ministry of Health. The participants were selected from rural areas of Machakos County in Kenya. Interviews focused on participants’ experience in delivering health education messages on topics related to death registration.

Machakos County is expansive geographically; therefore, my study’s data did not represent the entire county. Following Maxwell’s (2018) description of qualitative research’s transferability, I used in-depth interviews to describe the participants’ experiences of their context and the study phenomenon (see Malterud et al., 2018). Therefore, the study results could be applied in other settings in Kenya with similar population demographics to those of Machakos County. I selected participants using a snowball approach, as Creswell (2017) described. The study participants’ initial selection began with HWs who participated in public awareness sessions focused on civil registration of vital events.

## Limitations

Several potential limitations, challenges, and barriers may have affected my study. The study included only the perspectives of HWs from rural areas of Machakos County. Findings may not be generalizable to other areas of the county, even though those areas may face the same challenge of low death registration rates. Furthermore, individual behavior is diverse due to various cultural practices and taboos, suggesting that the behavior patterns studied may apply only to the study population (Horii et al., 2016). I anticipated the possibility of cultural differences and that study results may vary depending on the educational levels of HWs (see Fastring et al., 2017).

It was challenging to determine whether HWs' perspectives in the study area reflected those of other country regions and whether their perspectives reflected those of communities outside of the study area. Although individuals' skill level may have influenced their views, variations may have been present in the study regarding participants' experiences and perspectives. This phenomenon may have presented challenges in identifying common themes across the interview results but was still a strength because it increased the richness of the information collected.

HWs engage in considerable task shifting, making it difficult to distinguish when they conduct health education related to mortality surveillance. Therefore, the need for health education concerning mortality surveillance may indicate general health education needs involving other services and issues related to mortality surveillance. My study may add value to the role of HWs by exploring ways to improve health education interventions, specifically on the topics related to mortality surveillance. I did not face challenges recruiting HWs responsible for health education in rural parts of Machakos County in Kenya. I used the reflexive strategy and declared my background, beliefs, and any conflict that might have influenced my interaction with participants and data analysis.

## Significance

My study produced knowledge that may inform civil registration institutions' responses to future health education interventions (see Izudi et al., 2019). The study findings may also inform the development of health education programs to improve the challenging task of reporting deaths in Kenyan communities. Through an improved understanding the barriers to death registration, the knowledge gained from this study may equip HWs and other professionals with vital information to convince communities of the importance and process of death registration. The findings may also help HWs develop skills to foster collaboration and mobilization in death reporting (see Esamai et al., 2017).

I adopted a descriptive qualitative design. I collected qualitative data using open-ended individual interviews (see Creswell, 2017). The open-ended questions in Appendix B guided the interview discussions for my study. I used the COM-B model of behavior change to illuminate communication and opportunities to motivate the public to participate in mortality surveillance (see Flannery et al., 2018; McDonagh et al., 2019). Although the study did not explicitly focus on death registration, it highlighted the significance of behavior diagnosis as an essential step to enhance public engagement and uptake of death registration services.

The results of my study provided the evidence base for social change in developing content for targeted health education materials that may raise awareness of the importance of death registration. Furthermore, my research may enable health promotion activities in death reporting by conveying the HWs' perspectives on health education needs for death registration (see Sumankuuro et al., 2017). This study has the potential to transform death registration processes by identifying fundamental behavior changes that can be incorporated into the routine practice of HWs' involvement as death registration agents in their communities.

## Implications for Social Change

The study's possible implications include knowledge generation that ranges from capabilities, opportunities, and motivation to enhance health education interventions beyond health and well-being by educating communities on the importance of death outcomes in public health. Death reporting provides essential information about the decedent, the cause of death, and the final disposition. This information benefits the general population because it is used to transfer property and is the primary evidence for any social issues related to the deceased. In terms of national planning, death information is used to pinpoint reasons for ill health, thereby providing useful public health planning leads. According to Adair and Lopez (2021), when deaths go unregistered, crucial evidence for planning service delivery and human development is missed, thereby resulting in poor planning and ineffective public health care systems in the long term.

The growing demand for evidence-based planning is eminent in all aspects of health development. According to the UN (2018), mortality data are critical for tracking the current sustainable development goals (SDGs). Death registration covers the first and most crucial step in mortality surveillance. The current study generated knowledge to explain health education needs on death registration in Kenya. The knowledge generated may be useful for improving death registration by addressing low completion rates. My study facilitated data collection for evidence-based health education planning and other interventions relevant to human development. The study results may provide an avenue to improve mortality surveillance and promote evidence-based planning at national and subnational levels.

## Summary

Most families in Kenya lack sufficient health education interventions to enhance death reporting efforts and improve local public health efforts in health education on mortality surveillance (Smith et al., 2017). As a result, Kenya, like many other developing parts of the world, faces the challenges of compiling comprehensive death registration information (Smith et al., 2017). Different studies have identified one reason for the low level of death registration as a lack of public awareness of the importance of death registration for public health purposes (Garenne, 2016; Love et al., 2020; Silva et al., 2016; WHO, 2016). The lack of awareness underscores my study’s contribution as a qualitative inquiry on how health education can address current issues in promoting mortality surveillance. Oung et al. (2019) described the need for innovative mechanisms to motivate individuals and families to register deaths. The current study contributed to the body of knowledge concerning improvements to health education related to death registration and its significance for public health, thereby enhancing the coverage and completeness of death registration. In this chapter, I provided a broad introduction to the study by outlining the study background, statement of the problem, research questions, and implications. Chapter 2 offers a literature review to identify the knowledge gap, research related to my study phenomenon, and the theoretical model that guided the study.

# Chapter 2: Literature Review

This literature review supported the need for exploring HWs' perspectives about conducting health education on improving death registration. Many factors about knowledge, attitude, and practices may affect death reporting (Bryce et al., 2016). However, there is limited evidence on using health education interventions to enhance death reporting efforts and improve Kenya's local public health efforts (Smith et al., 2017). Like many other developing parts of the world, Kenya faces the challenges of achieving complete death registration (Smith et al., 2017). Despite ongoing technological improvements and infrastructure investments in public health care, death registration coverage and completion rates remain low in Kenya (AbouZahr et al., 2015; de Savigny et al., 2017; Jennifer et al., 2016).

The UN (2018) revealed that death registration coverage across the world is low compared to birth registration. Global estimates showed that two-thirds of expected annual deaths remain unreported (WHO, 2018). When deaths are unreported and their causes are not accounted for, governments lack sufficient public health data to design effective public health education programs and policies for the living population or measure their health impact (Smith et al., 2017). I explored the need for health education to improve mortality surveillance based on the existing capabilities, opportunities, and motivation of HWs.

This literature review addresses knowledge of health education, its impact on public health, and how health education can improve mortality surveillance. I review the literature on health education and mortality surveillance and describe how the COM-B model of behavior change related to my study. I further consider the literature on how health education can positively impact death registration. In the Kenyan context, I examine the existing evidence on challenges and opportunities for death registration. Lastly, I explore the research on community HWs' perspectives on death registration, followed by a chapter summary and conclusion.

## Literature Search Strategy

The search strategy for this literature review consisted of various databases to locate peer-reviewed scholarly journal articles. I searched relevant literature from the Walden University Library. Academic Search Complete, EBSCO Research, ProQuest Central, ProQuest Health and Medicine, and PubMed were the databases used to complete the search. My search included a variety of keywords, both independently and in combination. Some of the keywords used were as follows: *mortality data in Kenya OR mortality surveillance*, *health workers*, *qualitative*, *behavior change*, *health education OR community health education*, *death registration OR death notification in Kenya*, *Civil Registration and Vital Statistics (CRVS)*, *Sustainable development goals (SDG)*, *cause of death reporting*, *health information systems in Kenya*, *vital statistics*, *public health policy*, and *COM-B model of behavior change*. I narrowed my search to articles published within 5 years of the date of search. I used filters together with the keywords to identify literature relevant to my geographical study area and to my study design and methodology.

The inclusion criteria for studies were based on articles related to health education and promotion, relevant to public health, and written in English. I included press and credible organization websites and published material from UN agencies and other development partners published within the last 5 years. I also reviewed public health dissertations that had included qualitative methodology published in the past 2 years. Based on the results of the search, a total of 212 articles, seven dissertations, and three websites were reviewed.

## Literature on COM-B Model and Death Registration

Researchers have used health education and behavior change models for many years to inform public health interventions and decision making (West et al., 2020). The COM-B model is a comprehensive behavior change model developed by West & Michie (2020) to guide the understanding of target behavior as a basis for designing effective interventions. This scheme has been widely used to map changes required for effective behavior change interventions (Caroline et al., 2020). Therefore, the model provided a theoretical foundation for improving health education for mortality surveillance. The COM-B model outlines three factors that must be present for any behavior to occur: capability, opportunity, and motivation (Caroline et al., 2020). The model has been applied to study multiple health behaviors at the individual and organizational levels (Rubinstein et al., 2015).

The model is at the core of the BCW, which offers a framework for designing behavior change interventions. The BCW is a synthesis of multiple frameworks in a systematic literature review. This tool has three interrelated layers, and the COM-B model is used to identify sources of behavior (Caroline et al., 2020). The other two layers of the BCW identify interventions and policy options for interventions. The interventions address identified behavior barriers and potential leverage of enablers identified by the COM-B analysis (Handley et al., 2016). According to Mitchell et al. (2020) and Flannery et al. (2018), the BCW provides a systematic, transparent way to conduct a behavioral assessment, identify the target behavior, select intervention functions, and develop theory-based intervention strategies. In this behavior system, capability, opportunity, and motivation interact to generate behavior that, in turn, influences these components (Mitchell et al., 2020; Michie et al., 2011; West & Michie, 2020). Behavior change interventions have successfully used the COM-B model, including those intended to improve health care interventions (e.g., encouraging safe practices in specific conditions; Aimee et al., 2019; Barker et al., 2016; Flannery et al., 2018).

The benefit of applying the COM-B model is that the model outlines multiple distinct explanatory components that highlight additional influential aspects to be considered for behavior change (Handley et al., 2016). The components of capability and opportunities describe an individual's psychological and physical capacity to engage in the activity, including having the necessary knowledge and skills. Therefore, increasing knowledge, education, and awareness of the essential nature of mortality surveillance in public health enables individuals and communities to provide information about death events to support mortality surveillance (Nickbakht et al., 2020). According to Silva et al., (2016) HWs have the information necessary to engage with the public and promote mortality surveillance as an essential public health component. Motivation is defined as brain processes that energize and direct behavior and is not limited to setting goals and conscious decision making. This phenomenon includes iterative processes, emotions, and analytical decision making. These components are categorized as reflective processes (involving evaluations and plans) and automatic processes (involving emotions and impulses that arise from associative learning or innate dispositions).

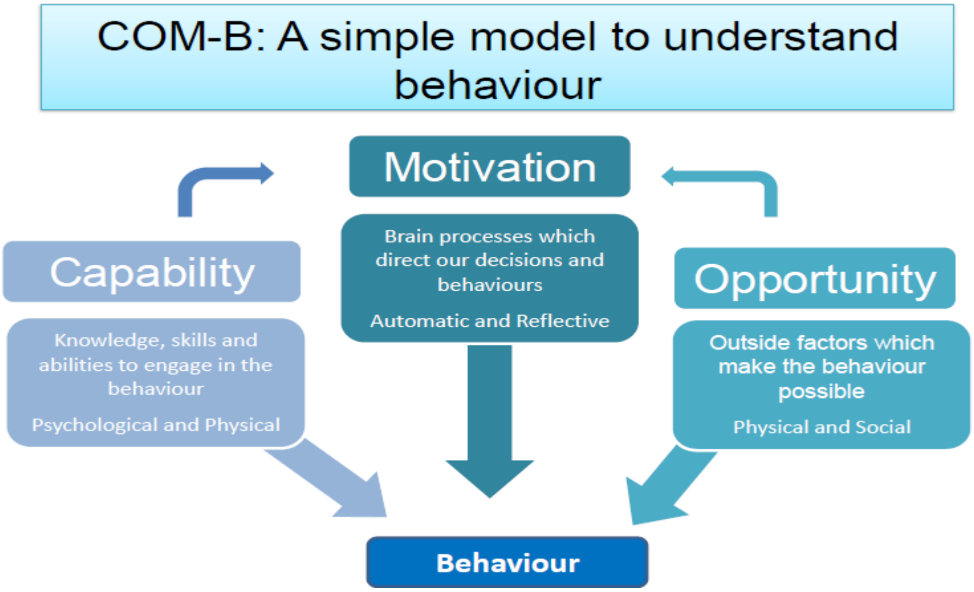
According to the evidence, analysis of the three constructs of the COM-B model can identify the interaction of various factors to increase the knowledge and skills needed for delivering health education regarding the importance of mortality surveillance in public health (Aimee et al., 2019; Flannery et al., 2018; Barionuevo et al., 2020; Nickbakht et al., 2020). Various educational programs have applied these constructs to improve the design and implementation of health education interventions. Some work has targeted patients (i.e., those who would use the program to improve their health outcomes). For example, Khong et al. (2018) used the COM-B model to develop a peer-led falls-prevention education program. In another study, Aimee et al. (2019) employed the COM-B model to identify factors that promote infant feeding intentions. Both studies addressed the participants' capability, opportunities, and motivation to identify areas of improvement in the various health education interventions and recommended an iterative, user-centered, participatory approach.

Successful implementation of health education concerning mortality surveillance depends on the necessary factors identified by Khong et al. (2018) and Aimee et al. (2019) based on their application of the COM-B model (see Figure 1). Some critical factors in the current study included the participants' knowledge of the topic, skills that the participants must employ in their efforts (e.g., communication and facilitation skills), and the availability of incentives motivating the participants (see Aimee et al., 2019;

Khong et al., 2018). In the current study, the participants were HWs. The topic was health education (particularly regarding the importance of public health practices of mortality surveillance) and the incentives that apply to both the HWs and the communities they serve.

**Figure 1**

*Generic COM-B Model: A Framework for Understanding Behavior (on the basis Michie et al., 2011)*



*Note.* Adapted from the BCW: A new method for characterizing and designing behavior change interventions by Michie, S., van Stralen, M. M., & West, R. 2011, *Implementation Science*, *6*(1), 4. Retrieved from https://doiorg.ezp.waldenulibrary.org/10.1186/1748-5908-6-42. 2011. Copyright by creative commons reprints permission.

Surr et al. (2020) also used the COM-B model to analyze barriers and facilitators to implementing dementia education and training in health and social care services. The researchers identified many factors that could impede or facilitate dementia training implementation and staff behavior change. The HWs in the present study might consider similar health education factors on and implementation of mortality surveillance. Factors found to be influential included the availability of training incentives, the attitude of trainees toward learning, the availability of resources, the presence or absence of external support from families and internal factors such as the organizational culture and its supportiveness of good dementia care and training implementation (Surr et al., 2020).

For HWs to offer adequate health education on mortality surveillance, the interventions must consider all necessary factors influencing this effort. The COM-B model has been used to investigate such factors in several studies (Caroline et al., 2020; Flannery et al., 2018; Maidment et al., 2020). Applying the COM-B in analyzing health education needs related to mortality surveillance helped me develop a coherent framework to identify appropriate behavior change techniques to improve mortality surveillance activities (see Flannery et al., 2018). Key factors included the knowledge of the value of mortality surveillance to both the public and health care providers, the skills of the HWs in carrying out health education activities related to mortality surveillance (e.g., communication and supervisory skills for those doing supportive supervision), and the availability of incentives to HWs.

## Mortality Surveillance: Importance and Relevance

Mortality surveillance involves collecting and reporting death information for evidence-based public health practice (English et al., 2018; Nichols et al., 2019). The notification of a death event should trigger the registration process, thereby providing documentation of deaths. Mortality surveillance establishes an effective health information system for compiling national statistics to measure health outcomes and inform public health policy formulation (de Savigny et al., 2017; Oung et al., (2019); UN, 2018). These data are useful in allocating resources across public and social development sectors and monitoring progress toward global targets such as the SDGs (Lawn et al., 2016; United Nations Populations Funds (UNFPA) and United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), 2017).

Despite significant efforts to improve death notification to support mortality surveillance, Kenya’s existing mortality data remain suboptimal, exhibiting completeness of only 38.8% in 2019 (Smith et al., 2017; UN, 2018). This situation weakens data validity in decision making and determining any public health impact. Both global standards and Kenya’s recommendations for complete death registration require documentation of the deceased’s demographic information and cause of death (de Savigny et al., 2017). This information allows monitoring of people’s health, such as trends in the community’s disease burden, ages at death, and priority areas, thereby helping to design prevention or intervention strategies (Nichols et al., 2019). When undertaken in real time, the data can alert emerging health threats and high-risk groups (Oung et al., 2019). This valuable information can prompt public health officials to see the need for interventions, including the requirement for specific facilities and conditions (Bhardwaj, 2019: English et al., 2018; Lawn et al., 2016; Norwegian Refugee Council, 2015; Silva et al., 2016; UN, 2018; Pillay-van Wyk et al., 2016).

## Barriers to Death Registration

When citizens wish to report deaths, barriers can prevent them from taking such action or require prohibitive levels of effort and determination to register a death (Smith et al., 2017). Moreover, the system may also encounter challenges that make the process not work optimally.

### Structural/Systemic Barriers

The processes and procedures for death notification are problematic in many countries. Information on the process is unclear and inconsistent, and the requisite forms may be difficult to access or complete. At times, delays in registering people may further complicate the situation, especially in the case of vulnerable populations (Cobos & de Savigny, 2017).

Death registration processes in Kenya are passive. The strategies depend on families to initiate death registration (Bryce et al., 2016; de Savigny et al., 2017; UNFPA & UNESCAP, 2017; UNICEF, 2017). The community exhibits a knowledge gap, especially in rural areas where most people are unaware of the death registration process and how they access the services (Maduekwe, 2017. This situation has been reported in Kenya, where the demand for registration is low, leading to lower rates countrywide (Smith et al., 2017). Creating death registration awareness among civil registration authorities is instrumental in reporting deaths (Garenne et al., 2016; Jackson, 2018; Maduekwe, 2017; Munos et al., 2015; Oung et al., 2019; Silva et al., 2016; UNICEF, 2017; World Bank, (2018a). Some families view death registration services as an optional requirement rather than a legal requirement due to limited knowledge of the importance of formal notification of the event by households (Oung et al., 2019). Furthermore, civil registration officials lack follow-up to ensure the family registers a death (Oung et al., 2019; UNFPA & UNESCAP, 2017).

There are disjointed processes among major CRVS stakeholders, such as the Births and Deaths Registry, Health Service, and Statistical Services (Cobos & de Savigny, 2017). Many countries' CRVS services have failed to tap into these sectors due to the absence of a countrywide unique identification system (Nichols et al., 2019). Countries that have taken the initiative to link death registration to health services have reported significant improvement in the completeness of their death registrations (WHO, 2016). Such efforts might include placing registration offices within health facilities, enabling and requiring other cadres of HWs (e.g., ward nurses, social workers, clinical officers, or physicians) to support the process by referring people appropriately or documenting deaths (Nichols et al., 2019). Other neglected avenues include the involvement of other community-based entities, such as mortuaries and burial authorities, or local chiefs who are responsible for the issuance of burial or funeral permits (AbouZahr, 2015; de Savigny, 2017; Garenne et al., 2016; Jackson, 2018; Maduekwe, 2017; UNICEF, 2017).

## Social-Economic Barriers

In many developing countries, registration services are inadequate, given the vast geographic expanse, especially in rural and remote areas (AbouZahr, 2015). As a result, families may find it difficult to physically access or contact registering offices, let alone reach out to certified healthcare personnel to identify the cause of death (Garenne et al., 2016; Maduekwe, 2017; Peralta, 2019; Silva et al., 2016; UNICEF, 2017). In situations where registration services are located far from the population, there are direct and indirect costs related to reporting a death event. Such charges include official fees, fines for late registration, transport costs, lost wages, bribes, and time (Bryce et al., 2016). These expenses may restrict many families from accessing services, especially the poor and marginalized (Maduekwe, 2017; Norwegian Refugee Council, 2015; Silva, 2016; UNFPA & UNESCAP, 2017; UNICEF, 2017; UNSD, 2018; World Bank, 2018b).

Death registrations contribute to social value in providing essential statistics useful for resource planning for the population (AbouZahr et al., 2015). However, seeing the big picture requires a developed civic culture in many developing countries (Maduekwe, 2017)**.** According to Bryce et al. (2016), health education provides information on the benefits in this context. For instance, subsidized services linked to a family member’s death may be less available in Kenya than in developed countries. People find value in death registration only when they connect the process to accessing inheritance, property, or insurance, which may be limited for the poor in developing countries like Kenya (Bryce et al., 2016). According to Maduekwe (2017), Silva (2016), and the WHO (2016), the presumed advantages of registration have little meaning compared with the day-to-day challenges of meeting basic needs, such as food, shelter, education, and security. Therefore, individuals may not see the value of going through a strenuous process that may not have a positive impact on them (Garenne et al., 2016; Oung et al., 2019; UNICEF, 2017; UNSD, 2018a).

Death registration involves providing personal information to the government through authorized officials and systems (Silva et al., 2016; UNICEF, 2017). There is a risk that both authorized and unauthorized third parties may gain access to this information for surveillance, private data harvesting, or other functions (illicit and legal alike), thus violating individual rights (Silva et al., 2016). Mistrust between citizens and the state may, to a great extent, limit the state's efforts to realize an acceptable level of data, as citizens may withhold or deliberately give wrong information (Silva et al., 2016).

### Cultural Barriers

Social behavior and norms found in human society are powerful in directing society's actions (Maduekwe, 2017). When not aligned with the government's requirements, these factors tend to be detrimental to the state's effort to realize its goals. Accordingly, when death registration is not acceptable in a culture, leading people in this direction can be challenging (UNICEF, 2017). Some communities in Kenya have cultural and religious practices that place taboos against people's reporting of deaths (for example, neonates) (Aseyo et al., 2018). In these cultures, the death of an unfulfilled soul is not to be mentioned or discussed. In other communities, traditional registration practices may impinge on people's perceptions of the need for registration and certification of vital events, weakening the demand for formalized certifications and identity (Maduekwe, 2017; UNICEF, 2017).

## Capabilities and Opportunities for Registering Deaths

Regarding promoting behavior related to the public health importance of mortality surveillance, capabilities relate to knowledge and skills that enable individuals or the public to take further action (McDonagh et al., 2019). According to Flannery et al., (2018) and Michie et al. (2011), the capability is to comprehend and engage in the necessary thought process introduced by health education interventions. On a related note, Nichols et al. (2019) showed that training communities on the relevance and use of clearly defined messages could aid the understanding that drove knowledge and a feeling of confidence to make informed decisions. In comparison, opportunity includes all the factors lying outside individuals that help them appreciate the value of mortality surveillance. Types of opportunity include physical opportunity afforded by the local environment and social opportunity afforded by the cultural environment that dictate the way people think about mortality surveillance (Flannery et al., 2018). In supporting social norms, incentives and a positive environment are significant success factors that create the desired opportunity for action.

## Knowledge and Awareness

The knowledge of both the mortality surveillance process and the importance of death registration is critical. Studies on a similar topic from the African region indicate that many families remain unaware of the benefits of death registration (Aseyo et al., 2018; Boateng et al., 2017; Esamai et al., 2017; Maduekwe et al., 2017). These studies highlight opportunities for targeted communication about the importance of death registration, not only for access to legal rights, but to ensure access to population awareness on benefits like planning resources for social benefits, economic mobility, and ultimately public health improvement.

A study on death registration in Kenya found that 59% of respondents understood how to complete the registration process. Nevertheless, the decision to do so may often be tied to the need for proof of death to navigate administrative procedures (Maduekwe et al., 2017). Furthermore, evidence has shown that a lack of awareness may result in stigmatized conditions that deter families from registering deaths, leading to under-reporting deaths (Nuriddin et al., 2018). Understanding the death registration system's existence, value, and legality is crucial for public health. According to UNESCAP (2017), once citizens realize that death registration is a legal requirement, they must register to adhere to state laws (Mantulak, & Nicholas, 2016; Norwegian Refugee Council, 2015).

However, AbouZahr (2015) acknowledged that people are more motivated to comply with services than an imposition by authorities, as the former fosters trust between the state and the citizens that can be leveraged with increased knowledge and awareness. Several studies reported that navigating the mortality surveillance system was a key barrier to death registration, particularly among parents who had lower education levels. Maduekwe et al., 2017 noted that health education would create a capacity to enable individuals to negotiate bureaucracies in formal, unfamiliar settings outside the family or community, including registration services.

## Motivation to Register Deaths

While death registration provides significant evidence and benefits to public health, the practice has not reached the level of universality, accuracy, and reliability that is required for planning purposes in many African countries such as Kenya (UNICEF, 2017). According to the World Bank (2018a), Kenya has a relatively good system in terms of registration coverage, but data on death causes are almost nonexistent. This gap provides the impetus to understand the factors that drive individuals and families to register deaths.

### Social-Economic Motivation

Death registration affords legal status to individuals and families by providing the legal documentation necessary to establish personal and family legal rights, empowering them to make claims regarding property, inheritance, land, and access to social benefits associated with orphanhood and widowhood (UNSD, 2018b). This service makes the remaining family members, both men and women, and children feel acknowledged, protected, and enabled to exercise their human rights. Individuals also require death certificates when they want to remarry after losing a spouse (Norwegian Refugee Council, 2015; UNICEF, 2017).

The affordability of the process, which includes minimizing the financial barriers to accessing the service, is an important motivation. Affordability consists of eliminating or reducing registration fees, including penalties for failure to comply (e.g., late registration), and removing informal fees or corruption in the process (Maduekwe, 2017; Norwegian Refugee Council, 2015). Moreover, the accessibility of registration offices reduces some indirect costs, including time and transport, which have been noted among the limitations affecting residents in rural and remote areas (UNICEF, 2017). The services also become more accessible if the registration process is embedded within existing structures, for example, where health services are offered (World Bank 2018b).

Straightforward and standardized procedures encourage the public to seek services. People become interested in going through the registration process if they have clarity about the process and the requirements regarding supporting documents. This phenomenon also applies when the documentation processes eliminate burdensome civil registration practices, making them flexible (Norwegian Refugee Council, 2015; World Bank 2018b). The system relies on people to provide personal information about events. In turn, citizens feel obliged to provide accurate and complete information when they have appropriate levels of trust in government systems. Trust is built if individuals are assured of proper data handling, including confidentiality and assurance that the information is only be used for the intended purpose (Maduekwe, 2017). Furthermore, Cobos and de Savigny (2017) emphasized using information technology to improve citizens experience, primarily through enhancing the process. As a result, individuals and families can easily access services, experiencing improved speed and reliability unavailable through manual handling (AbouZahr et al., 2015).

## Cultural Motivation

People's culture may either support or limit the death registration process. According to Maduekwe (2017), people living in communities with traditional practices with a system of record-keeping and registration practices are likely to be willing to participate in a death registration system. Understanding the cultural practices surrounding death registration may allow for better alignment of health education interventions with local norms to motivate communities on mortality surveillance. For example, in Morocco, an estimated 65% of deaths among men are reported compared to only 35% of deaths among women (Silva et al., 2016). The low rate of women's death reporting suggests there is a clear motivation to report men's deaths rather than women's due to the low socio-cultural value attached to the latter.

While there may be incompatibilities between the standard death registration process and the cultural norms about deaths, little evidence exists about how health education has been used to motivate communities in Kenya on the public health value of documenting death information. Existing evidence suggests that stigma can significantly demotivate families from registering deaths (Nuriddin et al., 2018). For example, Nuriddin et al. (2018) showed that the under-reporting of fatalities partly drove the ebola outbreak in Sierra Leone due to the stigma related to the disease; hence it was difficult for local authorities to determine the appropriate response measures.

## Health Education and Death Registration Globally

Health education empowers communities to navigate and access health and other essential services such as death registration for health improvement. Unfortunately, this educational endeavor is dominated by disease prevention and focuses less on the undesired outcomes of death (Nuriddin et al., 2018). Tracking health interventions, developing public health policy, and monitoring global initiatives progress, such as SDGs, requires reliable and timely mortality data (Jackson et al., 2018). SDGs, also known as global goals, were adopted by UN member states in 2015 as a universal call to action to end poverty by 2030 (Kruk et al., 2018). According to Nuriddin et al., (2018), seven of the 17 SDGs require cause-specific mortality data for mortality surveillance.

Therefore, mortality surveillance is essential to ensure all deaths are reported for statistical purposes and to plan future health interventions, as mentioned earlier.

Nevertheless, in many parts of the world, such data are unavailable or unreliable (Bloomberg Philanthropies, 2020; Lawn et al., 2016; Peralta et al., 2019; Pillay-van Wyk et al., 2016). In Kenya, death registration systems are either weak or absent and have not reached the appropriate rate of universality, accuracy, and reliability to achieve a usable state for planning purposes (AbouZahr et al., 2015). Thus, using data for development planning may lead to erroneous information that does not reflect the needs of already vulnerable populations (UNFPA & UNESCAP, 2017).

Various factors have curtailed the efforts of the Kenyan government to improve death registration. Government efforts to link death registration to health services have failed to enable HWs to provide the necessary health education (UNFPA & UNESCAP, 2017). HWs have benefited from offering various health education services and creating demand for essential health improvement services (Garenne et al., 2016; Jackson, 2017; Maduekwe, 2017). However, lack of awareness has also been identified as a deterrent in communities accessing death registration services, resulting in incompleteness and inaccurate mortality data. Citizens are not cognizant of this process as a legal requirement (Maduekwe, 2017; Mikkelsen et al., 2015; Norwegian Refugee Council, 2015; UNESCAP, 2017).

Evidence has shown that HWs involvement has improved citizens’ access to health services and Kenya’s health outcomes (Gatuguta et al., 2019). HWs are trained to deliver health education by default, focusing on a specific topic. The approach is useful in educating communities on disease prevention measures, which eventually create demand for healthcare-seeking behavior (Boaten et al., 2017; Hashi et al., 2017; Owek et al., 2017). However, it is not commonly used to create awareness and demand for a death registration to successfully implement mortality surveillance (Silva et al., 2016). The evidence is limited regarding how HWs can successfully deliver health education about death registration.

## Health Education Capabilities for Health Workers in Kenya

Health education has been key to increasing knowledge and improving decision-making ability. Therefore, enabling change involving acceptable practices, such as promoting mortality surveillance, means educating the public on the importance to public health of mortality surveillance as well as fostering positive health-seeking behavior from within the communities (Ghaffari et al., 2018 Hashi et al., 2017; Izudi et al., 2019; Karinja et al., 2020; Owek et al., 2016). The behaviors and practices include those that lead to the improvement of better health outcomes, e.g., hygiene–hand washing, access to maternal and child health services (Fastring & Madison2017; Ghaffari et al., 2018; Hashi et al., 2017; Izudi et al., 2019; Karinja et al., 2020). Furthermore, misconceptions such as damaging cultural beliefs must be addressed to enhance understanding without stigmatizing cultural perceptions (Boaten et al., 2017; Sumankuuro et al., 2017).

Different cadres of HWs are involved in health education (DiCarlo et al., 2018; Gatuguta et al., 2019). These professionals are either placed within the community as health extension workers or in health facilities (Nichols et al., 2019; Winn et al., 2018; Yaya et al., 2015). HWs can successfully offer health education when they are knowledgeable on the subject. Some degree of their current training focuses on specific content, communication skills, and facilitation skills (Boaten, 2017; Gatuguta et al., 2019; Hashi et al., 2017; Nichols et al., 2019; Owek et al., 2016; Winn et al., 2018; Yaya et al., 2015).

HWs require support to be able to undertake this role as educators, including specific training and continuous education (Aseyo et al., 2018; Gatuguta et al., 2019; Kane et al., 2016; Nichols et al., 2019; Ormel et al., 2019; Owek et al., 2016; Uddin et al., 2019; Winn et al., 2018; Yaya et al., 2015). Incentives and job motivation acceptance by the community (Nichols et al., 2019), and support-oriented supervision, are also necessary (Ormel et al., 2019). In comparison, the public needs to be served by people they can trust, who maintain confidentiality, and are easily accessible (Gatuguta et al., 2019; Owek et al., 2016).

Health education programs have been delivered to various populations, including school children and adults. HWs conduct these sessions in different settings, such as schools, households, and other places, while undertaking other duties (Gatuguta et al., 2019; Yaya et al., 2015). Health networks offer untapped potential to leverage health services to notify and register births and deaths in many countries. In some countries, including Ethiopia, registration for vital statistics has been acknowledged as a routine task for HWs, which has been done successfully (Jackson et al., 2018; Nichols et al., 2019; Yaya et al., 2015). In other settings, as HWs have been instrumental in offering health education sessions to various targets on diverse topics as part of their role, they can also be considered to provide education services on death registration.

## Health Workers' Perspectives on Death Registration

In Kenya, HWs have been included on the primary healthcare spectrum alongside other HWs (Silva et al., 2016). Population growth and scarcity of human resources in the country have led to the necessity of empowering HWs to undertake death reporting, which had previously been reserved for civil registration professionals (Winn et al., 2018). Combining formal healthcare systems with community-based efforts has produced excellent results for its effects on the Millennium Development Goals (Black et al., 2016). One hundred eighty-nine countries have agreed upon this set of eight goals with defined targets to reduce poverty by empowering the world's most vulnerable populations (Wysokińska, 2017). For instance, by leveraging the role of HWs in service delivery for children, under-age-5 mortality was reduced owing to effective behavior change in terms of managing different illnesses and conditions such as malaria, pneumonia, HIV, and other health problems (Black et al., 2016).

Evidence has also shown that the HWs role has been crucial in improving supply, demand, and access to health services by delivering these in communities and promoting healthy behaviors (Helleringer et al., 2018; Hutain et al., 2019). These successes range from basic diagnosis, treatment, and referral services to the provision of health education and promotion (Helleringer et al., 2018; Hutain et al., 2019). However, according to Black et al. (2016), the impact level varies with sociodemographic contexts and is highest in rural rather than peri-urban and nomadic regions. The primary qualification has usually been acceptable in the communities HWs serve corresponding to their education level (Helleringer et al., 2018**)**.

In Kenya, the Ministry of Health is one of the critical stakeholders mandated to report deaths to initiate registration. Despite this expectation, integration between registration authorities and the health sector is limited. Often, HWs are not aware of this function’s relevance and do not have adequate training in this area (World Bank 2018b). Nevertheless, other cadres, including midwives, nurses, and other HWs, are not required by law to report deaths (UNFPA & UNESCAP, 2017).

The HWs role has been evolving, thereby continuously resulting in task shifting. This change has improved motivation and satisfaction to deliver various services, including health education (Helleringer et al., 2018). As a result of task shifting, HWs have been successfully recruited to improve data reflecting vital statistics, including death (Helleringer et al., 2018; Nichols et al., 2019). With basic education and proper training, HWs support families in registering deaths in various contexts. This function includes sensitizing families to the importance of completing the process by visiting the appropriate office, reporting any deaths, locating contacts, and introducing them to registration officials (Hazard et al., 2020; Hutain et al., 2019).

According to Helleringer et al. (2018), HWs routine tasks make them aware of every death occurring in their area. Therefore, as a part of healthcare services and routine reporting, HWs can assume the role of reporting the death to the civil registry using established protocols (AbouZahr et al., 2015). However, they would usually need training and some incentives (e.g., transport allowances) to carry out this additional role as they are volunteers in many cases (AbouZahr et al., 2015; Munos et al., 2015; UNSD, 2018b).

Training HWs should be adapted to fulfill emerging needs to integrate vital event reporting into healthcare services (AbouZahr et al., 2015). Refresher training is also necessary, especially to improve knowledge retention and updates in technology and methods (Couper et al., 2018). Training should also be tailored to specific needs, such as death registration, and consider the differences in cultural and religious beliefs and particular practices of the communities served (Black et al., 2016; Hazard et al., 2020; Helleringer et al., 2018; Hutain et al., 2019; Uddin, 2019). Supportive supervision is necessary to ensure HWs' motivation and show them that their work is valued (Black et al., 2016; Helleringer et al., 2018).

The experiences of HWs vary significantly between countries in terms of support provided by the government. Although some work voluntarily, full-time status would help improve performance and encourage HWs to exert the effort necessary to deliver quality care (Black et al., 2016). However, where this practice is impossible, other non-financial incentives are highly effective in motivating them (Hazard et al., 2020). Such encouragements may include training certification, a clear career path, professional support from superiors, and recognition of their hard work (Black et al., 2016; Helleringer et al., 2018).

## Summary and Chapter Conclusion

In this chapter, I reviewed and analyzed the literature on health education focused on mortality surveillance to understand the phenomenon and identify gaps in the literature for further research on health education needs. Mortality surveillance data comprise a critical aspect in informing decisions necessary to monitor the impact of public health interventions for sustainable development within an individual country, such as Kenya and globally (World Bank, 2018b). However, all evidence points to the fact that many countries still have problems in reaching acceptable levels of accuracy, reliability, and completeness necessary to inform essential public health policy decisions.

Different reasons limiting death registration have been identified, including a fragmented process among major CRVS stakeholders, such as the health services sector, where many opportunities to enrich the data are neglected. Moreover, many families are not aware of this process's existence, and the few who are informed do not see its value unless issues such as inheritance are involved.

Health education focusing on mortality surveillance is an essential driver to improve the utilization of health and other crucial services, including death reporting. Educational intervention can standardize death reporting and inform stakeholders, including the community, about the public health importance of mortality data. Nonprofessional HWs (e.g., those who have been highly successful in implementing other health interventions) can be instrumental in supporting this process as they serve in an environment where they regularly interact with the community (Silva, 2016). However, as part of successfully using this resource, understanding the behaviors that can facilitate or impede the initiative is paramount, enabling the behavior change process to use effective models such as the COM-B model. This model allows stakeholders to be informed of death registration's critical aspects and identify necessary measures to consider when developing health education interventions focusing on mortality surveillance.

In the next chapter, I discuss my research methodology and justify the research design and use of a descriptive qualitative design. I have outlined the sampling strategy, described data collection, and discussed the analytic process. I examine key concepts related to my qualitative research and outline the approach to identifying study participants and the ethical considerations for conducting my study.

# Chapter 3: Research Method

My aim was to understand HWs' perspectives regarding the need for health education to support mortality surveillance. In Chapters 1 and 2, I provided an overview of the study and a literature review to identify the knowledge gap that the study addressed. The existing literature gap in my study phenomenon was limited health education interventions focusing on the importance of mortality surveillance.

This chapter discusses my research choice of a descriptive qualitative design and the methodology used to answer the research questions. I cover the research design and rationale, my role as a researcher, study methodology, instruments, data collection, and data analysis. Lastly, I describe ethical considerations and issues regarding the trustworthiness of the research.

## Research Design and Rationale

The research tradition used in the study was descriptive qualitative, and the central phenomenon involved understanding the health education needed to improve death registration in Machakos Country, Kenya. I used the COM-B model to explore health education needs in terms of the three model constructs: knowledge capabilities, enabling opportunities, and motivation. A phenomenological design was not chosen for this study because I did not seek to explore and describe participants' experiences and reflections. According to McDonagh (2019), qualitative research on opinions and individual reflections without structured processing of those experiences from participants cannot be phenomenological. This is because phenomenological studies are intended to interpret information to discover intentional changes that affect the outcome

(Kim et al., 2017). A descriptive qualitative design was the best fit for my study because it allowed to conduct in-depth interviews with participants to understand their perspective and experience and develop a detailed description of the study phenomenon.

The overarching purpose of qualitative research is to derive understanding from participants regarding the meaning they attach to the study phenomenon. Merriam and Grenier (2019) discouraged the assumption that all qualitative research has aspects of phenomenology without further identifying subgroups of qualitative research that best answer specific research questions. Different subgroups of qualitative research include a basic description, phenomenology, case studies, grounded theory, and ethnography (Creswell & Poth, 2018; Lowe et al., 2018). I did not seek to discover any grounded theory through the interpretation of participant experiences; therefore, out of the qualitative categories, the basic descriptive qualitative approach was adopted as the suitable approach. Tshililo et al. (2019) used a similar approach to describe nursing challenges for integrating HIV and AIDS services into primary health care in South Africa. According to Creswell and Poth (2018), a descriptive qualitative approach is useful for many public health research questions to explore professionals' experiences and perspectives to improve their services.

Phenomenological research was not applicable to the current study because it involves interpreting information generated to obtain a detailed exploration of the participant's lived experience (Creswell & Poth, 2018). According to Willis et al. (2016), lived experience is integral to phenomenology to provide a researcher's orientation to reflect on the meaning of lived experiences, such as healing from a health condition.

Meanwhile, case studies that seek to explore a single or collective case study were not the best approach to answer the research questions in the current study (see Creswell & Poth, 2018). Grounded theory was not used because it is suitable for researchers who aim to discover or develop a theory based on the study phenomenon, which was not the focus of my study (see Corbin & Strauss, 2015). Ethnographic research extends understanding of shared viewpoints from a cultural perspective (Creswell, 2017). In contrast, my study's focus was on the experiences of HWs on health education needs with no particular emphasis on bounded cases.

Participants' experiences and reflections in this study were captured through interviews. Creswell and Poth (2018) emphasized that interviews help qualitative researchers engage with participants with probes to reveal conversations that may not occur with self-reporting surveys or observations. The following research questions were framed within the three constructs of the COM-B model and used to explore the study phenomenon:

1. What are health education resources available to HWs regarding death registration in Machakos County, Kenya?
2. What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya?
3. What motivates HWs to report deaths and underlying causes in Machakos County, Kenya?

## Role of the Researcher

My role as the researcher was to identify and interview the participants for data collection and maintain a neutral point of view to facilitate rich discussion based on an objective stance of the study, as outlined by Clark and Vealé (2018). As the primary researcher, I remained nonjudgmental toward the participants' views. I applied data collection skills to ask questions and prompt participants for an in-depth discussion to obtain data on my study phenomenon (see Vogl et al., 2017). This practice aligned with what Clark and Vealé's (2018) recommendation that building participant confidence is an essential measure that qualitative researchers take to improve data quality and study results.

Being the central instrument in this qualitative research, I was aware of my experience's potential influence on the results. Creswell and Poth (2018) described this phenomenon as a pitfall in qualitative research. Based on this awareness, I adhered to my interview questions and used predetermined guiding concepts to avoid bias from preconceived expectations while conducting interviews. I did not conduct research within my work environment to mitigate potential conflicts of interest. The only relationship I established with participants was for research purposes only.

Corbin and Strauss (2015) highlighted that a researcher's preconceived expectations could result in bias that could affect qualitative research quality. Following Maxwell's (2018) approach to mitigate my personal experience's potential influence, I remained transparent with participants by providing them with relevant information about the study and seeking their consent to ensure the confidentiality of the information they shared with me. According to the Walden University and Africa Medical Research Foundation (AMREF) Institutional Review Board (IRB) provisions, this approach ensured participants' privacy. To mitigate potential sample biases due to my study involvement, I ensured that participants' selection followed strict criteria to facilitate rich data from diverse experiences and expertise.

## Methodology

### Participant Selection Logic

The population chosen for this study was male and female health workers aged 18 years and above living in Machakos County, Kenya. Participants were purposively recruited to the study. This technique allowed for a nonrandom, deliberate selection of participants based on their qualities and interest in the study phenomenon. Purposive sampling does not limit the number of participants, thereby allowing the researcher to select participants guided by their interest and knowledge of the study phenomenon, as noted by Creswell and Poth (2018). The purposive technique is informed by the participants, the study site, and the required sample size. The purposive technique provided space for participants' unlimited choice based on a defined selection criterion (Burkholder et al., 2016; Creswell, 2017). The selection criteria for my study participants included (a) HWs involved in death registration activities in Machakos County, Kenya, (b) men and women trained as HWs, and (c) involvement in health education activities in Machakos County, Kenya. These criteria enhanced the recruitment of an information-rich group of motivated, willing, and comfortable participants sharing their perspectives on the study phenomenon. Participants were contacted by email. I enclosed an invitation to participate in the study and established a social media exchange with participants who responded to the invitation email. The social media exchange facilitated informal information sharing that was useful to help selected participants understand my study and prepare them to have an in-depth discussion during their interviews.

## Sampling

I employed a descriptive qualitative narrative approach. The characteristics and benefits informed this choice of research approach (see Marshall & Rossman, 2016). Marshall and Rossman (2016) noted a significant difference between qualitative and quantitative research in sample size choice. Qualitative research uses a smaller sample, while quantitative studies rely on larger sample sizes. In contrast to qualitative research, quantitative analysis intends to generalize findings; qualitative researchers identify information-rich cases that provide in-depth data to answer the central research question (Creswell, 2017). According to Marshall and Rossman, larger samples might affect the richness of the data collected and the study results’ credibility.

Sample size in qualitative has been debated, with a consensus that a sample is large enough to permit rich data collection and small to allow for in-depth analysis (Malterud & Guassora, (2018)). To maintain the data’s richness, I recruited and interviewed 10 HWs. Clark and Vealé (2018) argued that sufficient sample size in qualitative research is when there is data saturation, which means more interviews no longer provide fresh insights or highlight new information.

My recruitment of study participants followed the snowballing technique, also known as the chain referral sampling approach, to identify subsequent participants.

According to Marshall and Rossman (2016), this method offers a convenient way to enhance participant recruitment by referrals. This approach was useful in identifying participants with knowledge of my study phenomenon who were willing to voluntarily share their mortality surveillance perspectives.

The first group of participants was identified through email and social media contacts to independent health professional groups. This range of options was necessary to allow participants to choose a preferred means of communication they were comfortable using. According to Clark and Vealé (2018), qualitative researchers' efforts to engage with motivated informants can positively impact the quality of information shared and the study results' credibility. Recruitment continued until data saturation was reached on 10 interviews. Qualitative researchers use saturation to judge when to stop sampling. According to Clark and Vealé (2018), this phenomenon represents the point when no new information is being generated, as additional participants begin to repeat the same information.

## Informed Consent

Selected participants received an invitation email (see Appendix A) explaining that participation was voluntary and assuring them that they were free to withdraw at any time. Each interview session was recorded using a digital voice recorder. According to Clark and Vealé (2018), engaging participants with information about the research before conducting interviews allows them to contribute effectively to the study phenomenon and make informed decisions about their participation. The invitation letter had my contact details if the participants required additional information about the study. Participants were advised to provide written consent by replying to the invitation email stating “I consent,” confirming their informed consent. The consent form was approved by Walden University’s IRB (number 03-19-21-07233050) and AMREF’s IRB (number ESRC-P989/2021). Once permission to participate was received, each participant was contacted to arrange a suitable date, an appropriate time, and a convenient place to conduct the interview.

## Instrumentation

The data collection instrument involved a single in-depth semi-structured interview with each participant. An interview guide (see Appendix C) was developed using open-ended questions to collect in-depth information from my participants. The interview guide was based on my literature review and the research questions. The participants were asked to provide their demographic information, including name, address, and telephone contact, as part of the recruitment procedure. This information was used only for identification during the interviews, and participants were anonymized with codes during data transcription and analysis.

I conducted in-person interviews with the option of using Zoom for participants who were not available for the in-person meeting due to Covid-19 preventive measures. I observed all Covid-19 prevention protocols during the in-person interview sessions. Discussions with participants were organized with flexibility at a convenient time to allow a comprehensive and rich account of my study phenomenon, as Maxwell (2018) described. Such flexibility is critical in creating an environment to collect and gain quality data reflecting study participants’ experiences (Clark & Vealé, 2018). To remain focused on the study topic, I prepared an interview guide with a short introduction to the study, predetermined questions, and probes to guide my study participants conversations (see Appendix C).

I pilot tested my interviews with a small sample of two friends to check my interview questions' consistency and quality. According to Creswell (2017), piloting interviews in qualitative research can address practical issues in the interview guide by trying out the questions to highlight improvisation and facilitate a smooth interviewing process in the main study. Piloting my interview questions helped me organize and reframe some of the probes to my interview questions. I was also able to practice how to use the interview guide and test Zoom for recording my data before conducting interviews with study participants. Pilot participants were two family friends purposively selected following similar criteria regarding HWs age 18 years and above who were currently involved in community health education activities. I did not need IRB approval for the pilot because it involved friends helping me practice my interviewing skills and improve the interview questions.

### Procedures for Recruitment, Participation, and Data Collection

Participants were recruited from a professional network of HWs established with former college colleagues and a network of friends. The first interaction with participants was through an introduction email and a follow-up phone call to share the study purpose and why I needed their support. I used that opportunity to win their interest by proactively responding to any question they had. Those interested reached out to me by phone or email. I organized a virtual meeting with those who expressed interest in discussing informed consent. The consent outlined how privacy and confidentiality would be maintained in the study, the time interviews would take, and the benefits of participation in the study.

Once consent was received, I collected data using in-depth semi-structured interviews. According to Clark and Vealé (2018), in-depth interviews help qualitative researchers gain deep insight into the study participants' views concerning the phenomenon of interest. I developed an interview protocol to guide the data collection process. My interview protocol consisted of the study topic, interview date, participant's name, my name as the researcher, and a list of topics or questions to guide the interviews. I developed the interview questions based on the research questions, and I organized them according to the COM-B model that I was using to guide my study.

According to Morgan (2018), the utility of interview guides in qualitative research helps the researcher stay on course and establish consistency and trust throughout the interview process. I have followed the qualitative interview process of asking informants specific questions and using an interview guide to conceptualize information from the interviews (Maxwell, 2018). My interview guide contained three groups of questions organized according to the COM-B model and a fourth group to elicit demographic information. I developed seven leading questions and probes to explore participants' experiences of the study phenomenon.

### In-Depth Interviews

Data collection began after receiving IRB approval from Walden University and AMREF. I conducted a single in-depth interview with each study participant. Following

Creswell’s (2017) description of qualitative interviews, I performed a pre-interview briefing to obtain signed consent from every participant, assuring the confidentiality of their shared information. Interviews lasted between 30 and 45 minutes, and each participant was asked to choose their preferred time. Before starting each interview, I obtained informed consent from all participants by briefing them on the study and clarifying that participation in the interview was voluntary.

Before starting every interview session, I sought permission to audio-record the interview using Zoom. I also took notes and contacted participants to seek clarification and further information during data analysis. The feedback mechanism was useful for participants to clarify their views and ask follow-up questions after the interview was completed. Creswell (2017) and Pedersen et al. (2016) view this approach as paramount to establishing rapport and trust, enabling participants to share their perspectives without any concerns.

## Data Storage

### *Audio Recordings*

I maintained a digital record of all interview sessions and obtained permission from every participant before the recording started at the beginning of the interview session. Each interview record is kept in a separate file, and all files are coded to protect the participants’ identities. Electronic records for my study are password protected and saved on a personal laptop.

### *Field Notes*

I established field notes (see Appendix F) to complement the audio recordings. Pedersen et al. (2016) noted that highlighting participants' responses is useful in qualitative interviews to extract and complement information from audio recordings. I was careful to minimize excess notetaking to allow for reflexivity, as Creswell (2017) described. As with audio recording, field notes for each participant were coded to protect the participant's identity. Field notes have been kept in a notebook belonging to me as the researcher and stored in a locked box.

## Debriefing Procedures

At the end of each interview, I thanked participants for their time and reassured them that all information collected would be treated with the utmost confidentiality. I also informed them about my study's potential contribution to improving health education about mortality surveillance. Each participant had the opportunity to ask questions about any concerns they might have regarding the issues discussed in the interview. Participants shared phone numbers and emails that I used for follow-up contacts to verify transcript accuracy. I also encouraged participants to contact me if they had any follow-up questions. At the end of every interview, I summarized my understanding of the participant's statements as described by Creswell (2017). I used these summaries to validate my account of participant responses. This technique was useful to ensure that the study findings are based on the participant's reactions and minimize bias.

## Data Analysis Plan

Qualitative data analysis examines transcribed data and attempts to comprehend how participants respond to the research questions (Vogl et al., 2017). I transcribed all data collected in the study to organize it for analysis. Analysis of transcribed data was conducted using both manual techniques and qualitative computer software NVivo version 12 (Vogl et al., 2017). According to Clark and Vealé (2018), computer-assisted data analysis, such as NVivo, helps to manage bulky data. Once data was organized for ease of analysis, I manually engaged with the data to identify emerging themes. According to Creswell (2017), coding involves recognizing a significant element and highlighting it before interpretation. I reviewed the data by reading transcripts multiple times to understand it better and map out common themes, as described by Morgan (2018).

According to Vaughn and Turner (2016), identifying themes from various ideas in the qualitative data set and determining the pattern that aligns with the study purpose is a fundamental stage that defines the quality of qualitative data analysis results. Therefore, I used a multiple-step approach for my data analysis. The steps included the following: (a) data familiarization, (b) coding using the COM-B model, (c) identification of sub-themes, (d) review and revision of sub-themes, (e) definition and naming sub-themes, (f) analysis and interpretation of patterns as they appear in the themes, and construction of crucial domains (Vaughn & Turner, 2016).

## Issues of Trustworthiness

To ensure the trustworthiness of qualitative research findings, Creswell (2017) posited that researchers should establish methodological rigor by implementing verification strategies. According to Korstjens and Moser (2017, verification strategies enable the researcher to consider tools that cohere with the study methodology, particularly in the relationship between sampling, data collection, and analysis. According to Hadi and Jose (2016), qualitative researchers must use different techniques to produce results that are credible, dependable, and, where possible, transferable to other contexts.

### Credibility

To ensure the credibility and trustworthiness my research and determine its overall quality, I discussed my research methodology, data analysis, and interpretation throughout the research process with my committee members for peer review and to debrief my findings. Lowe et al. (2018) describ this strategy as analytical triangulation when qualitative researchers choose peer debriefing with a skilled qualitative researcher. I conducted 5-10 minutes follow-up calls with all the 10 participants to verify transcripts were accurate representations of participants’ responses. There were no changes to any of the transcripts as participants agreed the transcripts captured their views as presented during the interviews. Creswell (2017) described member checking as a critical strategy to ensure the credibility and dependability of qualitative research findings. My interview questions design was iterative with probes to elicit in-depth discussions of my study topic. Hadi and Jose (2016) noted that qualitative interview probes are critical to helping the researcher revisit topics until the issue under discussion is addressed in-depth, such that any contradictions from respondents can be detected and resolved, thus improving credibility.

### Transferability

Transferability is possible when methodological details of a study are provided to the extent that it can help others replicate the study with a different set of participants. According to Korstjens and Moser (2017), transferability entails transferring study findings to another population different from that used. To achieve transferability, I have detailed the research process of data collection, analysis, conditions of the study and dissemination. Although this study may not be generalized due to research criteria and the small sample size, the selection of participants across diverse demographic clusters fo gender, age and education from the study area and the rich descriptive accounts of the study phenomenon from the participants interviews and direct quotes of their views, allows for transferability, and a possibility for comparison in other contexts.

### Dependability

Korstjens and Moser (2017) described dependability as the consistency of the study findings. To achieve dependability in this study, I undertook a member-checking strategy by a follow-up call with my participants to evaluate transcripts and interpret the data to ensure they were consistent with the ideas provided during their interviews. I also provided them with details on the research method, context, and outcomes for future reference and follow-up on study outcomes.

### Confirmability

Ensuring confirmability in qualitative research addresses the issue of researcher bias. According to Creswell (2017) and Hadi and Jose (2016), strategies to achieve confirmability help to ensure study findings from the informant's experience and ideas rather than the researcher's characteristics and preferences. In the study, I developed a detailed methodological description to enable readers to determine that data collection and emerging themes can be accepted. Furthermore, during data collection and analysis, I regularly debriefed my committee members to establish analytic triangulation to reduce researcher bias.

## Ethical Procedures

This study involves human participation; therefore, I had to address participants confidentiality, as Gupta (2017) posited. Meanwhile, because this investigation is a qualitative study involving interviews, there are very minimal adverse effects on the participants apart from the inconvenience of investing time. I also obtained IRB approval from Walden University and AMREF. The approval outlines all measures I used to protect my study participants.

According to Creswell (2017), ethical considerations to protect participant identity and information shared are paramount, and consent must be obtained from anyone who participates in any study. Participation in my study was voluntary, and all selected participants were allowed to read the study information sheet and provide informed consent before participating. There was no pressure applied to anyone to join the study. The consent forms provided my study’s purpose and described the requirements for participation.

Consent forms were delivered by email to potential participants. Consent was given in English, as all the participants are proficient in spoken and written English. During the consent process, I informed participants about my study and the benefits of participating. This information included explanations to participants on their right to withdraw at any point in the interview for any reason. This plan follows Creswell’s (2017) suggestion that any risk or benefits emanating from a study should be explained to the participants.

I have used a coding system to protect participant information, identities, and locations during data analysis and reporting. Korstjens and Moser (2017) suggested that qualitative researchers could use pseudonyms (for example, Participant 1 (P1), Participant 2 (P2), and so on) to ensure that collected data cannot be linked to any individual participant. By using pseudonyms to identify participants, all other identifiable information could be deleted. The participant’s data has been kept confidential.

Data related to my study, including electronic files, recorded interviews, and the interview transcript, have been held in a locked filing cabinet and password protected. Only my dissertation committee members and I were able to review the de-identified interview data. All study files are to be kept in a private safe in my home office for five years after completing my study. At the end of that time, the data will be destroyed by shredding physical documents and permanently deleting electronic data files.

## Summary

In this chapter, I discussed the choice of a descriptive qualitative design and methodology for this study. I described the research design and rationale, my role as a researcher, study methodology, instruments used, data collection, and the analysis plan. I explained the IRB and ethical considerations and issues related to the trustworthiness of the research. I outlined the COM-B model as applied in the study to understand health education needs to improve mortality surveillance. Furthermore, I described participant selection criteria and the sampling approach for the 10 study participants. In the next Chapter 4, I summarize data analysis and results to answer my research questions.

# Chapter 4: Results

This qualitative descriptive study was conducted to understand HWs’ perspectives regarding the need for health education to support mortality surveillance in Machakos County, Kenya. The main objective of the research was to understand health education gaps for mortality surveillance. The following research questions were derived from this main objective to provide additional focus:

RQ1: What are health education resources available to HWs regarding death registration in Machakos County, Kenya?

RQ2: What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya?

RQ3: What motivates HWs to report deaths and underlying causes in Machakos County, Kenya?

This chapter provides a description of the study setting, followed by a description of the demographic characteristics of the study participants. Next, this chapter includes descriptions of the data collection and data analysis procedures, followed by a discussion of the evidence of trustworthiness. This chapter then proceeds with a presentation of the study results. A summary of the findings concludes this chapter.

## Setting

I conducted interviews with 10 participants and recorded them on Zoom using a telephone. The recruitment of participants followed the approved Walden University IRB guidelines. Interviews were organized with flexibility at a convenient time to allow a comprehensive and rich account of my study phenomenon. Although virtual interviewing could have increased access to informants, I did not consider it for this study to allow in-person connection and interaction with study participants. Furthermore, virtual interviews would have required a stable internet connection for me and the participant, which was a challenge Kenyan context and would have limited participant selection. There were no personal or organizational conditions that influenced participants or their experience at the time of study that may have influenced interpretation of the study results.

## Participants' Demographics

A sample size of 10 HWs was purposively selected. Participants living in Machakos County, Kenya, were selected if they met the following requirements: (a) involved in death registration activities in Machakos County, (b) received formal training as HWs, and (c) involved in health education activities in Machakos County. I obtained the following demographic information for all participants: biological sex, work tittle, and training background. The sex distribution of participants was 40% female and 60% male. All participants had some level of health education decision making at their various locations of work and had formal training in health care in public health, nursing, or clinical medicine. Table 1 displays demographic characteristics of the study participants.

**Table 1**

*Demographic Data of Participants*

| Participant | Sex | Work title | Training background |
|---|---|---|---|
| P1 | Female | Health center in charge | Clinical medicine |
| P2 | Male | County public health officer | Public health |
| P3 | Female | Subcounty medical officer of health | Clinical medicine |
| P4 | Female | Health center in charge | Clinical medicine |
| P5 | Male | District public health nurse | Nurse |
| P6 | Male | Subcounty public health officer | Public health |
| P7 | Male | County surveillance officer | Public health |
| P8 | Female | District public health nurse | Nurse |
| P9 | Male | Subcounty public health officer | Public health |
| P10 | Male | Subcounty public health officer | Public health |

## Data Collection

The data collection process occurred from August 10, 2021, through December 20, 2021. I conducted a single, in-person, semi-structured interview with each of the 10 participants and recorded it using Zoom audio on phone. The duration of the interviews ranged from 30 to 45 minutes. The participants were identified purposively from a social network of public health professionals comprising former college mates and friends. My first contact with the group was when a former college mate introduced it to me during one of the group events. After the introduction, I shared with the group an introduction email on the study objectives and why I needed their support. I included my contact's address in the introduction email and requested those interested to contact me. Once I established initial conduct, I coordinated with those interested to participate in the study by sharing more information about the study, the data collection process, and how the study would benefit them and the public health profession to which they belonged. I used that opportunity to get their consent to participate.

Once consent was obtained, I communicated on phone with participants to schedule most suitable date and time for the interview. Interviews were conducted only after receiving consent from each of the participants. At the beginning of every interview, participants were greeted to build rapport and were encouraged to ask any questions they had about the study. After each interview, I recapped the consent for further clarity and requested participants’ contact for a follow-up call to verify their responses once the recorded data were transcribed. On the follow-up call, I went through their responses, especially those who had cross-cutting views throughout the interview session. Participants were asked whether they agreed with the statements. There were no changes made to any of the interviews after the follow-up calls because all participants agreed to what was captured in the transcripts.

The interviews were conducted using a researcher-developed IRB-approved interview guide (see Appendix A). Interviews were audio-recorded to ensure accurate preservation of the data for analysis. Serving as the sole instrument for collecting the data, I interacted with participants and made the interview setting comfortable. I was mindful to follow the interview questions without bias while observing body language, word choices, and tone. There were no variations from the data collection plan presented in Chapter 3, and no unexpected circumstances arose during data collection that would have influenced the interpretation of the results.

## Data Analysis

The 10 audio-recorded interviews were manually transcribed verbatim, and the transcripts were imported as source files into NVivo 12 software for analysis. According to Vogl et al., (2017), the software was useful to organize and structure my analysis in such a way that it took away a lot of clerical and data administrative task leaving me with time to come up with insights from the data. I analyzed the data using the six-step thematic procedure described by Vaughn and Turner (2016). The procedure used in the current study combined deductive and inductive approaches. The first step of the analysis involved reading and rereading the data to gain familiarity with them and make preliminary identifications of potential patterns in participants' responses.

The second step of the analysis involved coding the data using a deductive approach. The deductive approach began with selecting the main concepts from the COM-B model as preliminary codes. The three main concepts in the COM-B model are (a) capability, which includes the knowledge and the skills and ability to engage in the behavior; (b) motivation; and (c) opportunity, or external factors that make the behavior possible (Michie et al., 2011). In the current study, the capability concept was focused on resources, as indicated in RQ1, so the term resources were used instead of capability. There were three preliminary inductive codes to apply to the data: resources, motivation, and opportunities. To perform the deductive coding, I sorted the interview data into those three codes. The outcomes of the deductive coding are indicated in Table 2.

**Table 2**

*Deductive Coding Outcomes*

| Deductive code derived from COM-B model | Number of participants contributing to code | Number of data segments assigned to code |
|---|---|---|
| Resources | 10 | 54 |
| Opportunities | 10 | 72 |
| Motivation | 10 | 32 |

*Note*. COM-B model source: Michie et al. (2011).

In the third step of the analysis, inductive coding was conducted. The inductive coding process began by rereading the data in full again to identify any data segments relevant to HWs’ perspectives regarding the need for health education to support mortality surveillance that were left out of the deductive codes, to ensure these data segments were captured in the coding scheme. No relevant data segments were found that were not captured in the deductive codes. Next, inductive coding was conducted within each of the deductive codes. For example, under the deductive code resources, the data were reviewed and each data segment under that code was labeled with a brief, descriptive phrase summarizing its meaning. When different data segments had similar meanings, they were assigned the same label. Each of the resulting clusters of similarly labeled data segments was an inductive code. This process was conducted under each of the three deductive codes, with the result that a total of 21 inductive codes were identified. Table 3 indicates the inductive codes identified under each of the initial deductive codes.

**Table 3**

*Results of Inductively Coding the Data Assigned to Each of the Deductive Codes*

| Deductive code derived from COM-B model<br>Inductive code | Number of participants contributing to code | Number of data segments assigned to code |
|---|---|---|
| Resources | | |
| Discrepant data - Some training in mortality surveillance was provided | 1 | 2 |
| Education resources are inadequate | 7 | 13 |
| Funding for more HWs is needed | 6 | 7 |
| Information, Education, and Communication (IEC) health charts, posters, and brochures | 3 | 4 |
| IEC materials are developed without HW input | 4 | 6 |
| Mandated B1 death registration forms | 6 | 8 |
| Training in mortality surveillance is rare or nonexistent | 7 | 14 |
| Opportunities | | |
| Barazas are mainly attended by Community Health Volunteers (CHVs) | 6 | 9 |
| Communicating with families during death registration | 7 | 15 |
| CHVs meeting with communities | 8 | 15 |
| Death is rarely discussed in communities | 6 | 7 |
| Educating communities on preventive healthcare | 8 | 14 |
| Health talks in health facilities regarding specific conditions | 7 | 8 |
| Verbal autopsy based on questionnaire | 2 | 4 |
| Motivation | | |
| Data collection about demographic trends | 4 | 4 |
| Enabling preventive care | 6 | 6 |
| Ensuring contagion control and proper reporting in health facility | 2 | 5 |
| Health Ministry death registration audits | 1 | 1 |
| Monthly mortality surveillance reports to HQ | 1 | 2 |
| Need to address reporting gap in death registration | 3 | 6 |
| Registration reveals cause of death | 7 | 8 |

In the fourth step of the analysis, the codes were reviewed by comparing them to the original data to confirm that they accurately reflected patterns in participants' responses. Next, themes were named and defined. This process consisted of comparing each of the deductive codes and their subordinate inductive codes to the research questions to identify which question each code was relevant to addressing. Table 3 indicates how the three inductive codes were renamed, after careful consideration of the meaning of the data assigned to their subordinate inductive codes, to clarify their significance in addressing the research questions.

**Table 4**

*Renaming of Deductive Codes as Themes to Clarify Their Significance in Addressing Research Questions*

| Deductive code | | Research question to which deductive code was relevant | | Deductive code was renamed as a theme after consideration of the significance of the data, as revealed by inductive coding |
|---|---|---|---|---|
| Resources | → | RQ1. What health education resources are available to HWs regarding death registration? | → | Theme 1. Training and education resources are inadequate |
| Opportunities | → | RQ2. What opportunities do HWs have to inform communities about the importance of death registration? | → | Theme 2. There are opportunities for educating community members about the importance of death registration during routine HW tasks<br>Theme 3. HWs can educate community members about the importance of death registration through outreach activities |
| Motivation | → | RQ3. What motivates HWs to report deaths and underlying causes? | → | Theme 4. Death prevention is the strongest motivation for reporting deaths |

## Evidence of Trustworthiness

To ensure the trustworthiness of qualitative research findings, Creswell (2017) posited that researchers should establish methodological rigor by implementing verification strategies. According to Korstjens and Moser (2017), verification strategies will enable the researcher to consider tools that are consistent with the study methodology, particularly the relationship between sampling, data collection, and analysis. According to Hadi and Jose (2016), qualitative researchers must use different techniques to produce results that are credible, dependable and, where possible, transferable to other contexts.

### Credibility

To ensure my research's credibility and trustworthiness and determine the overall quality, I discussed my research methodology, data analysis, and interpretation throughout the research process with my committee members to peer review and debrief my findings. Lowe et al. (2018) described this strategy as analytical triangulation, when qualitative researchers choose peer debriefing with another skilled qualitative researcher. I further checked the data's credibility by undertaking member checking by a follow-up call with participants to verify my transcripts accuracy. Creswell (2017) described member checking as a critical strategy to ensure credibility and dependability of qualitative research findings. My interview questions design was iterative, with probes to elicit in-depth discussion of my study topic. Hadi and Jose (2016) noted that qualitative interviews probes are critical to helping the researcher revisit topics until it addresses the issue under discussion in-depth, such that any contradictions from respondents can be detected and resolved, thus improving credibility.

### Transferability

A study that is transferable is one that allows a comparison of the findings. According to Korstjens and Moser (2017), transferability entails transferring study findings to another population different from that used in the research. To achieve transferability, I developed a detailed description of my study phenomenon and methodology to allow readers to have a proper understanding. Despite having a small sample size due to the study design, participant selection was representative of different settings of health care system in Machakos County; their various roles in health education and decision-making responsibilities across the study area enrich the study results for comparison in other contexts. Furthermore, the data collected was a detailed descriptive account of participants' responses from interviews and direct quotes of their views on my study phenomenon. All data collected was stored and kept confidential throughout the study process to avoid distortion.

### Dependability

Korstjens and Moser (2017) describe dependability as the consistency of the study findings. To achieve dependability in my study, I performed a member-checking strategy by a follow-up call with my participants to evaluate transcripts and interpretation of the data to ensure they were in accord with the ideas they provided during interviews. I also provided details on the research method, context, and participant information for future reference for assessing the appropriateness of the research practice that I used in the study.

### Confirmability

Ensuring confirmability in qualitative research addresses the issue of researcher bias. According to Creswell (2017) and Hadi and Jose (2016), strategies to achieve confirmability help ensure study findings reflect the informants' experience and ideas, but not the researcher's characteristics and preferences. In the study, I developed a detailed methodological description to enable readers to determine that data collection and emerging themes can be accepted. Furthermore, during data collection and analysis, I regularly debriefed my committee members to establish analytic triangulation to reduce researcher bias.

## Results

This presentation of the results is organized by research question. Under the heading for each research question, the theme identified during data analysis as relevant to addressing the question is presented. Direct quotes from the data are provided as evidence for all findings.

### RQ1

What health education resources are available to HWs regarding death registration in Machakos County, Kenya? One theme was identified during data analysis that addressed this question. The theme was as follows:

### ***Theme 1: Training and Education Resources Are Inadequate***

All 10 participants contributed to this theme. The findings indicated that formal education and training about death registration were rarely or never provided, either to community members or to the HWs themselves, who learned about mortality surveillance on the job. Resources for IEC, in the form of posters, brochures, and health charts, were available to a limited extent. However, participants indicated that those materials had only tangential relevance to death registration and were not provided by the health ministry in adequate quantities. Overall, participants indicated that they needed more resources to educate communities about death registration, but that funding for those resources was often unavailable.

Seven participants indicated that the resource of training and education in mortality surveillance was rarely or never provided. P3 stated of the training HWs provided to CHVs and other community members, “The training does not cover mortality surveillance, so there is a gap. I feel we need to have a comprehensive package of training of the community heath extension workers and the persons, ideally, in every community.” P9 indicated that education and training were needed to convey to community members the basics of death registration: “They [community members] should be informed that any person who dies should be registered and they should obtain a valid death certificate.”

Other types of training were also absent. Asked whether there was any training for HWs in mortality surveillance and death registration, P10 answered, “I can’t say there is.” Asked the same question, P4 corroborated P10’s response by stating, “I have not heard of any.” P4 added that such training would be beneficial if it were offered: “Getting a training on death and its occurrences and the causes of deaths will help us as we collectively help our people out here. It will only be a good thing to do.” When asked whether any training on mortality surveillance was provided for HWs, P7 further corroborated P10’s and P4’s responses by stating, “There is none.” Asked why no trainings on mortality surveillance were provided to HWs, P9 answered, “We are lacking funds.” P9 clarified that new HWs learned how to conduct mortality surveillance through “on the job training” rather than formal training.

One participant, P5, provided partially discrepant data indicating that some training in mortality surveillance was provided to HWs. P5 stated that some training was provided at “our monthly meetings” by, “the subcounty surveillance officer.” However, P5 clarified that these trainings only involved updates on changes to mortality surveillance protocols, rather than formal training on mortality surveillance generally: “In [mortality] surveillance, we always experience a lot of changes. So, during our health meetings, that is the monthly meetings, he’ll come and give us a talk on the same.”

Three participants indicated that HWs had some IEC materials as resources, including charts, brochures, and posters. P5 stated of the charts that they were disease-specific and therefore limited in their relevance to death registration: “We have charts. We have, it’s called the standards for poliomyelitis, the standards chart, where we get to know the signs and symptoms of an infection like measles. We have a standard, integrated chart for monitoring diarrheal diseases.” P2 indicated that HWs were sometimes able to distribute IEC brochures or pamphlets when educating community members, but that these resources were not always available: “When we are giving out information, we can have a few pamphlets or leaflets which we share with the community, if they are available.” P6 confirmed, “We have posters. We have brochures, we also have fliers.” However, P6 added that the posters, like the charts, were disease-specific and therefore limited in their relevance to death registration: “The IEC materials, what I normally see are the posters geared to a certain disease.”

All participants indicated that IEC materials were limited in their availability. P10 said that to compensate for the lack of informational materials that could be distributed to community members, HWs conveyed information orally: “We are very much limited in the resources, so generally what we do is just talking. We won’t have [IEC] materials generally. We lack materials.” P3 affirmed that IEC materials were often lacking and that having more of them would be beneficial to communities: “Information education communication materials, most of the times, you find they are inadequate. If we could get more, we could distribute maybe to the community, the schools, and the like.”

Participants further indicated that HW input could aid in the development of IEC materials that would address death registration more specifically, to help HWs educate community members about the importance of properly reporting deaths. P6 said of the limited relevance of existing IEC materials that none of them were designed specifically to address the topic of death registration: “We don’t have a specific one [IEC material] for information, communication, education, and mortality. We don’t have a specific one. I’ve not seen any geared to that.” Asked whether HWs contributed to the development of IEC materials, or whether HWs only received pre-prepared materials, P3 answered, “We just receive them prepared." Asked if HWs and community members should be involved in the preparation of IEC materials, P3 added, "I feel that will really help because I think at times, we tend to assume what is [happening] on the ground, yet when we go to the ground you get something different." P7 provided a response that corroborated P3's, saying of the development of IEC materials, "We [HWs] are not involved. You know, there is a top-to-bottom system. They don't ask us for our inputs." Asked if it would be beneficial for HWs to be involved in the preparation of IEC materials, P7 added, "Yes, because we are the people on the ground, and we are well versed in whatever happens. They [supervisors at the health ministry] don't know what happens on the ground." Thus, participants indicated that more IEC resources were needed, and that the relevance of IEC materials to educating community members about death registration could be improved by inviting input from HWs.

## RQ2

What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya? Two themes were identified during data analysis to address this question. The theme was as follows:

### *Theme 2: There Are Opportunities for Educating Community Members About the Importance of Death Registration During Routine HW Tasks*

Although participants reported in the data associated with Theme 1 that they lacked adequate resources to educate community members about the importance of death registration, all 10 participants reported that they had ample opportunities to do so. HWs had opportunities to communicate with community members about death registration during routine HW tasks, such as when HWs educated community members about preventive health care, and when they communicated with families during death registrations.

Eight participants reported that they regularly communicated with community members about preventive health care, interactions which represented an opportunity to discuss the importance of death registration. P8 said community education took place in the context of outreach services, in which HWs went into communities and talked to citizens: “We usually have outreach services. In the outreach services, we do integrated services, whereby we go to the community.” P3 said of health education given to community members that it mainly concerned, “Children and the mothers, for example malaria, pneumonia, diarrhea, diseases, danger signs in pregnancy, importance of attending antenatal clinics among others, even Covid nowadays.” P6 gave two examples of what educating community members about preventive health care typically involved:

> Right now, we are talking about Covid. It’s everywhere. We are telling people about how to prevent themselves from Covid, and if they don’t prevent, what they expect. And then we also tell them that other than observing the key, basic measures—like social distancing, use of face mask, and washing with soap and water, or use of sanitizer—we also tell them that vaccination is the way to go. Because most of the viral diseases, they are prevented through vaccination. So, normally we are telling them that. Then the issue of now like HIV-AIDS, we also tell the people the importance of testing and counseling.

These examples by P6 highlight the important connection between mortality surveillance and disease prevention. The Covid pandemic played an important role in enhancing this connection, as acknowledged by the emphasis on community education to prevent the Covid pandemic and the potential risks related to outcomes such as death. HWs pointed out that the Covid pandemic had presented an opportunity to re-imagine health education beyond disease prevention to engaging communities on death reporting related to the pandemic.

Another opportunity to educate community members about death registration occurred when CHVs met with community members and individual households to discuss health-related topics. P10 stated that an opportunity to educate community members through "the community health officers [volunteers] meeting small households or groups of people and talking candidly about these [health-related] things." P2 corroborated P10's response, saying, "We pass to the CHVs. These CHVs oversee about 100 households, [and are] able to go house to house and have discussions with them." However, P7 explained that although CHVs were trained to report deaths themselves, they were not trained to educate community members about death registration:

> We have our CHVs on the ground. They usually visit the households, but there is a gap, in terms of, they are not trained regarding death audits. They are not trained. So, they only know about maybe visiting the household, sensitizing community members on the issue of hygiene, but the issue of referring or maybe sensitizing the community on the issue of death, they are not even trained.

HWs also had contact with families and an opportunity to discuss the importance of death registration while they were registering deaths. P8 described taking this opportunity to educate community members in stating,

> The information [about the importance of death registration] comes with us. They [community members] are not aware, so when we are doing the [death] surveillance is when we will tell them the importance of that surveillance, why we are doing that surveillance.

P4 confirmed, “When we are doing our talk with them [community members], like when they have lost a patient, we try to insist and encourage them to ensure that they get the death certificate.” P4 explained that when a patient died in the health facility or was transported to the health facility after death, HWs connected the family with information of a accompany that could rent them a hearse, and the body was transported to the nearest morgue, which was usually in Machakos. Meanwhile, the HW, filled out a form (called the B1 form) and issued the bereaved family with a chit torn from the completed form. The family then needed to go to the area local authority, who would sign the chit. The family then had to take the signed chit to the Births and Deaths Registry in Machakos, where the death certificate was issued. This process was somewhat arduous. P4 stated, “the process takes between two to three months”, and in part as a result, P4 said, “Our people are not that thorough with getting the death certificate. They mostly concentrate on burying the dead.” For this reason, families often needed to be informed of the importance of registering deaths at the time of their bereavement.

### *Theme 3: HWs Can Educate Community Members About the Importance of Death Registration Through Outreach Activities*

HWs had opportunities to communicate with community members about death registration during outreach activities, such as when they led community meetings (barazas) and conducted health talks at their respective health facilities. Community health volunteers (CHVs) also regularly met with community members and had opportunities to educate them about death registration. Obstacles to communication about death registration included a cultural aversion to discussing death and the absence of most community members from barazas (community meetings) and health talks.

Participants said that health talks delivered in the health facility were another potential opportunity to educate community members about the importance of death registration. P10 indicated that the importance of death registration could be discussed, "As part of the package of any health talk that one comes around," but that health talks "focusing directly on specifically" the death registration was not given. Instead, "Death registration comes as part of the packages of health talks. For instance, if there is a death, we encourage that every death be registered and registered promptly." Thus, the opportunity to discuss death registration in health talks was somewhat limited because the focus of the talks was on preventive care in relation to specific diseases. The importance of death registration would only be raised in relation to that disease and discussed as one contingency that might need to be addressed if preventive care fails. P4 said of the health talks, "We sensitize them [community members] on disease, and we sensitize them on how to act in the event of a disease," adding that sample topics included, "Diabetes, we do TP, we do hypertension, we do cholera and we do diseases associated with pregnancy."

Barazas were sometimes held to discuss health issues, providing HWs with another opportunity to educate community members about the importance of death registration. P7 defined the word "baraza" in stating, "A baraza is a gathering where we have the chief convene members of the community and when you talk about issues." P2 said the attendance at these barazas was typically low: "When we call them [community members] for a health baraza, you find the attendance is not that exciting." P3 added that barazas related to health care were attended primarily by CHVs who did not need additional education about death registration, rather than by other community members who might benefit more from it:

> When you call for a baraza, mostly you find these are our own people, like the community health volunteers are the ones who have come, and you want to pass this information to the entire community, or rather members from the community, so that is another challenge.

Overall, participants cited several opportunities for communicating with community members about the importance of death registration, including community education outreach, barazas, and health talks. However, participants added that the topic of death was difficult to broach during those interactions because of a cultural aversion to discussing it, and that this aversion constituted a significant obstacle to taking advantage of opportunities to educate community members about death registration. P1 said,

> It goes down to our culture. I don’t know if anyone wants to cover death. So, I may come up one day and tell people, “Today we’re discussing about death,” [and] they would even run away, wondering, “You want to kill us? Why are you talking about it?” So, I think death is still, on its own, it’s a stigma.

P3 corroborated P1’s response in saying that during community education outreach, “Death has never been discussed as a topic,” and that because of the cultural aversion to the subject, “When we give the [health] talks, we are mostly aiming at prevention, not looking at if you fail to do this, what is the outcome. It has never even crossed our minds to talk about death.” P4 affirmed, “In Africa, people are very scared of death. We only talk about it when we have a patient you are sure will not recover . . . Like the terminally ill, you start preparing them for the outcome we could be expecting.” The cultural aversion to discussing death made it difficult to discuss death registration as a focal topic when educating community members, so HWs felt confined to mentioning the subject only glancingly and in relation to specific diseases or communicating with bereaved families at the time of their loss.

## RQ3

What motivates HWs to report deaths and underlying causes in Machakos County, Kenya? One theme was identified during data analysis to address this question. The theme was as follows:

### *Theme 4: Death Prevention Is the Strongest Motivation for Reporting Deaths*

All 10 participants contributed to this theme. Participants indicated that they had the strongest motivation to report deaths and encourage community members to register deaths because doing so allowed for the collection of mortality data that could be used to prevent further deaths. Participants said that registration revealed the cause of death, and the cause was entered into monthly reports the HWs provided to the Ministry of Health, which aggregated the data to detect mortality trends. Consistent with their other responses, participants added that a significant reporting gap existed, in that deaths were underreported. Participants said HWs had a strong incentive to address this gap so accurate data could be collected and measures implemented to prevent avoidable deaths in their communities.

The participants said that death registration was important because it involved assessing, documenting, and reporting the cause of death. Knowing the cause of death was important for prevention of further deaths. P6 said, “Death registration is very important to us because first of all, it will give us the cause of the death.” P5 explained in relation to potentially contagious causes of mortality, “We’d like to know much the cause of death. Then we identify whether it is a disease that can be transmitted to another person so that mitigations are done before it goes out of hand.” P1 explained how knowing causes of death allowed HWs to tailor their educational efforts to address knowledge gaps in the community and thereby prevent deaths:

> It’s good to report for us to know what the exact cause of these deaths in our community is . . . because now it helps us to reduce these kinds of deaths. Because there are deaths that occur that they were not supposed even to occur. For example, let me give an example, even the [children], the under-fives. We get, maybe, death due to diarrhea because of dehydration. You find that the mother

> maybe fails to bring in the child to the [healthcare] facility because of maybe lack of knowledge. That is a death that we could prevent if the mother had brought this child early to the team.

Death registration also enabled HWs to detect demographic trends in mortality, participants said. P10 explained, “We identify the ages going. Who are dying more? Are they the elderly, are they the youthful? Are they the very young ones? So that can really help us.” P6 added of aggregating demographic data from death registration, “It will give us who is the gender that is affected by the death.”

Enabling preventive care to prevent future deaths was the primary motivation for reporting deaths, participants indicated. P2 said of reporting deaths, “It will guide us on implementing health preventive measures.” P3 said that based on reported deaths, “We take the corrective actions so that we can prevent future deaths.” In relation to deaths caused by traffic accidents, P4 indicated that reporting enabled HWs and government officials to address questions such as,

> Can it be avoided? Can it be assisted in a way that we slow down the death rate? Areas like here in Mlolongo where we have a highspeed highway where most of the people get accidents and they die, reporting it to public health as a cause of death will help the government to erect some bumps and crossovers on the roads to just alleviate the suffering of the population.

P6 also said of death reporting, “If we know the cause [of death], we [can] target [it] in our health promotion. We teach the people how this is coming about, and now they can protect themselves about it.” P9 specifically referenced the issue of neonatal and maternal mortality as one that could be addressed to some degree by collecting data and targeting community education outreach efforts:

> There are deaths that cannot be prevented, but there are others that can be prevented. For example, if a mother is giving birth in the community and there is no healthcare professional [present], that means complications may arise, and if it is not reported, an action won't be taken, and the possible action is just to educate the community about the importance of safe delivery.

The importance of registering deaths to gather data about causes and implement mitigations was a strong motivation to address reporting gaps, participants stated. P9 explained that families needed a government-issued permit to bury a body, but permits were issued at the morgue or health facility before the family had the opportunity to go through the process of obtaining the death certificate. Therefore, many families used the permit to bury their relative legally and did not properly register the death so the cause of mortality could be reported in government data. P9 said,

> There is a gap that needs to be addressed. The moment that a person dies, he's given a burial permit by the hospital or by the local administration. Once the burial permit is given to them [the family], they do not go ahead and report that case so that they can obtain a death certificate.

P8 indicated that merely taking a body to a mortuary was not enough and that death would not be properly reported unless the family went through the process of obtaining the death certificate: "We can have a death that has occurred and has not been reported. Maybe it occurred, took the body to the mortuary, then they come and just bury.

So, it’s not captured anywhere in the data.” Thus, families had little motivation to go through the arduous, two- to three-month process of obtaining a death certificate by properly reporting the death because the burial permit was already issued.

## Summary

The main research objective was focused on understanding health education gaps for mortality surveillance. The main objective was addressed by addressing the three questions derived from it. RQ1 was: What health education resources are available to HWs regarding death registration in Machakos County, Kenya? The theme used to address this question was: Training, education, and personnel resources are inadequate. All 10 participants contributed to this theme. The findings indicated that formal education and training about death registration were rarely or never provided, either to community members or to the HWs themselves, who learned about mortality surveillance on the job. Resources for Information, Education, and Communication (IEC), in the form of posters, brochures, and health charts, were available to a limited extent. However, participants indicated that those materials had only tangential relevance to death registration and were not provided by the health ministry in adequate quantities. Overall, participants indicated that they needed more resources to educate communities about death registration, but that funding for those resources was often unavailable.

RQ2 was: What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya? Two themes were used to address this question. The first RQ2 theme was: there are opportunities to educate community members about the importance of death registration during routine HW activities. HWs had opportunities to communicate with community members about death registration during routine HW tasks, such as when they educated community members about preventive health care, and when they communicated with families during death registrations.

The second RQ2 theme was: HWs can educate community members about the importance of death registration through outreach activities. HWs had opportunities to communicate with community members about death registration when they educated them through outreach activities, such as when they led community meetings (barazas) and conducted health talks for community members in their own facility. CHVs also regularly met with community members and had opportunities to educate them about death registration. Obstacles to communication about death registration included a cultural aversion to discussing death and the absence of most community members from barazas and health talks.

RQ3 was: What motivates HWs to report deaths and underlying causes in Machakos County, Kenya? The theme used to address this question was: death prevention is the strongest motivation for reporting deaths. Participants indicated that they had the strongest motivation to report deaths and encourage community members to register deaths because doing so allowed for the collection of mortality data that could be used to prevent further deaths. Registration revealed the cause of death, participants said, and the cause was entered into monthly reports the HWs provided to the Ministry of Health, which aggregated the data to detect mortality trends. Consistent with their other responses, participants added that a significant reporting gap existed, in that deaths were underreported. HWs had a strong incentive to address this gap so accurate data could be collected and measures implemented to prevent avoidable deaths in the communities they served, participants said. Chapter 5 includes discussion, interpretation, and recommendations based on these findings.

# Chapter 5: Discussion, Conclusions, and Recommendations

This descriptive qualitative study was conducted to understand HWs' perspectives regarding the need for health education to support mortality surveillance in Machakos County, Kenya. Conducting a qualitative descriptive allowed me to explore and understand why health education was needed to improve mortality registration in Machakos County, Kenya, from the participants' perspective. In qualitative research, participants play an essential role in the sense that they help the researcher understand a phenomenon. In the current study, the phenomenon was the need for education in mortality registration from the participants' point of view (see Kim et al., 2017). I conducted this qualitative descriptive study to fill the gap in the literature regarding the need for health education on mortality surveillance and how training HWs on mortality surveillance could advance the process in Machakos County, Kenya.

The purpose of this study was understanding the health education gaps for mortality surveillance. Three questions were used to accomplish this purpose:

RQ1: What are health education resources available to HWs regarding death registration in Machakos County, Kenya?

RQ2: What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya?

RQ3: What motivates HWs to report deaths and underlying causes in Machakos County, Kenya?

## Summary of Findings

I conducted single, one-on-one, semi-structured interviews with 10 HWs from Machakos County to answer the research questions. I implemented thematic data analysis to ensure the alignment of themes to my research questions. The analysis revealed four themes that aligned with the research questions. Emergent themes were grounded on the COM-B model constructs. The first theme was training, and education resources were inadequate. For this theme, the participants agreed that formal education and training on death registration and surveillance were rare or never provided to the community or the health care workers. Many of the HWs learned about mortality surveillance while on the job.

The second theme indicated that there were opportunities for educating community members about the importance of death registration during routine health care tasks. The responses on this theme revealed that despite the inadequacy in training and study material to train health care providers about death registration, community members had numerous opportunities to be trained and educated on death registration and surveillance. The third theme also addressed the opportunities that were available during outreach to educate members of the community about the significance of death registration. Under this theme, it was evident that health care workers who attended community meetings were allowed time to talk to people who attended regarding the significance of registering their dead. The fourth theme was death prevention was the strongest motivation for reporting deaths. For this theme, the participants noted that the need to prevent more deaths and protect people from dying motivated members of the community to take an active role in reporting and registering deaths to help health care workers to have accurate data on the mortality. Table 4 displays the four themes' alignment to the research questions and the analytical categories derived from COM-B model constructs.

**Table 5**

*Alignment of Research Questions with Emergent Themes and COM-B Model Constructs*

| COM-B model construct | | Research question | | Emergent theme |
|---|---|---|---|---|
| Resources | → | RQ1. What health education resources are available to HWs regarding death registration? | → | Theme 1. Training and education resources are inadequate |
| Opportunities | → | RQ2. What opportunities do HWs have to inform communities about the importance of death registration? | → | Theme 2. There are opportunities for educating community members about the importance of death registration during routine HW tasks<br>Theme 3. HWs can educate community members about the importance of death registration through outreach activities |
| Motivation | → | RQ3. What motivates HWs to report deaths and underlying causes? | → | Theme 4. Death prevention is the strongest motivation for reporting deaths |

## Interpretation of the Findings

This qualitative descriptive study was conducted to understand HWs' perspectives regarding the need for education to support mortality surveillance. The findings of the study underlined the importance of health education among health workers to improve mortality surveillance in Machakos County, Kenya. According to Winn et al. (2018), health education is one of the core functions of health workers to assist their population in understanding critical health information needed to make healthy choices. This study results were based on qualitative data collected from three groups of health workers: nurses, clinical officers, and public health officers. These groups participate in reporting mortality depending on work settings. Both nurses and clinical officers work in settings involving patient care in hospitals, while the public health officers are involved with health activities in community settings. The study findings indicated that all groups understood their health education role in their work settings. Although they all had great opportunities to engage communities on disease prevention in their different settings, there was less focus on mortality surveillance. This was partly because disease prevention was more prominent in their routine work and well taught in their formal training, while mortality surveillance was mostly learned on the job with limited or nonexistent training resources.

The purpose of conducting this study was to investigate and report on the significance of health education in improving and positively facilitating death registration and supporting mortality surveillance by health care workers. Overall, four themes were obtained after analyzing the collected data thematically (see Clark & Veal 2018. The findings added knowledge to the literature on developing HWs' skills in health education on mortality surveillance.

### RQ1

What health education resources are available to HWs regarding death registration in Machakos County, Kenya?

#### *Theme 1: Training and Education Resources Are Inadequate*

In response to RQ1, I found that HWs and community members lacked training and education on death registration and surveillance. Also, besides lack of training, there were not enough study materials to facilitate health care providers' learning on death registration. It was evident that the available resources in IEC, consisting of health charts on death surveillance, brochures, and posters, were limited. When available, these resources were short in supply, and they contained only tangential information that was not relevant to mortality surveillance and did not address the training of HWs who would then train community members on the benefits of registering deaths. Even though members of the community registered deaths with health care workers, who kept the records and statistics, neither community members nor HWs understood the value of conducting such surveillance or the public health importance of mortality data deaths. Despite keeping health records, HWs' awareness of mortality statistics databases was limited to paper-based health records they collected.

This finding implied that the lack of training and education on death reporting and the public health importance of mortality data was due to inadequate training resources for HWs and the need to purchase the required learning materials. Lack of training, educational resources, and materials for personal learning limited the knowledge of HWs on death registration and, as a result, limited their ability to train community members. Therefore, there is a need for the Kenyan government to provide resources so that HWs can be trained and educated on the significance of death registration, and can, in turn, inform members of the community on the importance of registering deaths.

Regarding how the current findings confirm or disconfirm previous research, the key issues that were examined included the availability of resources from the government to facilitate health education on mortality surveillance based on different sources of mortality statistics of Machakos County. This will be useful in training health workers and local communities to participate in addressing public health issues affecting the population and empower HWs to make use of mortality data they collect to improve their health care practice. These findings concurred with the results presented by Jepkosgei et al. (2022) that many HWs were not trained on mortality data reporting and the significance of death registration due to a lack of resources even though part of their role is to collect and report on health information from their areas of work. Fawaz et al. (2018) illustrated that limited government investment in training resources negatively influenced the kind of training nurses received, some of which was not sufficient for their field application, especially in mortality surveillance. Similar results were posted by Pinkham et al. (2022), who established that lack of educational resources made it hard for nursing colleges to effectively train HWs on the techniques of mortality registration and how to replicate the same knowledge to the community they serve.

## RQ2

What opportunities do HWs have to inform communities about the importance of death registration in Machakos County, Kenya?

### *Theme 2: Opportunities for Educating Community Members About the Importance of Death Registration During Routine HW Tasks*

Analysis of the study results revealed that although HWs were not trained and lacked the necessary educational materials to train on the benefits of death registration, such opportunities were available for the community members. HWs described many opportunities to educate community members on the benefits of death registration and how the Ministry of Health could use such data to better people's lives. In particular, the participants responded that some opportunities were during preventive health care training sessions with community members.

Besides the educational role of HWs at the facility level, community-based health workers were another important strategy used to educate local communities on the importance of mortality registration. Compared to the health care workers, community based HWs had constant access to or frequently met with the community members. The community based HWs oversaw 100 households, a good number to inform about death registration. Furthermore, as part of their routine work, community based HWs maintain health records that form part of health statistics. This function gives them a unique opportunity to report on deaths and inform the community on public health importance of the data. However, allowing untrained community health workers to educate community members would result in a high likelihood of the community being misled or misguided.

HWs are responsible for mentoring community-based health workers and therefore are in a better position to train them on data mortality data reporting; however, the training may not be optimal due to lack of resources.

According to previous literature on the use of community health workers, the WHO (2016) identified them as a necessary link between communities and health care providers. Similar findings were reported by Olaniran et al. (2019), who found that community HWs were critical in promoting quality health care given their proximity to the community. Atuhaire et al. (2022) also noted that community health workers, when trained, enable health care providers to reach a larger portion of communities.

Despite opportunities to discuss death registration and the importance of maintaining an updated mortality record for the community, the cultural nature of the African community forbids an open discussion about death and the dead. According to current participants' responses, speaking about death was considered taboo and, as such, was prohibited, or only a few community members engaged in such discussions. These responses confirmed the conclusion arrived at by Okeke et al. (2017), who found that discussing death and the dead was a sign of bad luck and was the reason why many were not willing to engage in such discussions.

Similar conclusions were reported by Olaniran et al. (2019), who established that in the African community discussion of death and the dead lacked respect for the dead and that there were consequences for disrespecting the dead. Findings suggested that the government and health care workers were required to engage with the community to calm their belief about the dead and convince them of the benefits of registering their dead, but it was impossible to maintain updated data on the mortality rate within a particular community.

### *Theme 3: Health Workers Can Educate Community Members About the Importance of Death Registration Through Outreach Activities*

The second RQ was answered by this third theme that besides the normal health care routines conducted by health care workers, community meetings and CHVs who regularly met with community members had ample opportunities to inform members of community regarding the significance of death registration. Of the ten participants who were interviewed for this study, three stated that being invited to attend community meetings to educate the community about beneficial health practices presented them with the opportunity to educate the community about the significance of death registration. Responses indicated that community meetings bring together important members of the community, most of whom are concerned with death registration.

The outcome of participant responses regarding the use of barazas to inform the community about death registration confirmed the findings of Wakibi and Ngure (2021) who found that given the low registration rates for deaths in Kilifi County, health care workers used bazaars to engage with the members of the community. Wakibi and Ngure reported that although community bazaars did not solve the problem of transportation to register deaths, it informed the community of the significance of registering their deaths when delivering bodies for keep at hospital facilities. Despite the opportunity to educate the community about the perceived benefits of death registration, the participants experienced extreme challenges speaking about death in bazaars because members of the community found it disrespectful to the dead. Similar conclusions were reported by Olaniran et al. (2019), who established that in the African community, discussion of death and the dead lacked respect for the dead and that there were consequences for disrespecting the dead. Current findings suggest that health care workers should identify strategies that will help them engage the community and demystify their beliefs about disrespecting the dead. Demystifying old beliefs will provide health care workers the opportunity and platform to inform the community of the benefits of death registration on county and national government health planning.

## RQ3

What motivates HWs to report deaths and underlying causes in Machakos County, Kenya?

### *Theme 4: Death Prevention Is the Strongest Motivation for Reporting Deaths*

The fourth theme and RQ3 allowed for exploration of the factors that motivated community members to register deaths or report deaths to healthcare workers. Analyzing the collected interview data, the participants reported that engaging community members in death registration allowed them to understand the cause of death. In part, it allowed community members to ask HWs what caused the death of the loved ones if it was something they did not understand or were not aware of. Therefore, it suffices to say that mortality surveillance presented a learning opportunity for some members of the community. The participants further reported that knowing the cause of death helped them educate the community on how to protect themselves. This also allowed the government to refocus its training besides redeveloping its curriculum to ensure that its

HWs were well equipped with the skills and the knowledge to prevent such factors from continuing to cause death in the community.

The results on preventing death as motivation for enhanced death registration were also reported in extensive literature by Atuhaire et al. (2022), Wakibi and Ngure (2021), and Keats et al. (2018), who found that the mortality data helped the government improve their healthcare services to mitigate the number of people dying because of a certain cause. Wakibi and Ngure (2021) illustrated that data on mortality helped the government and especially the Ministry of Health, to allocate more resources as a means of increasing the lifespan of its citizens.

Other responses indicated that collecting and updating the mortality register was important to the health ministry both in local and national governments. As per the participants, keeping an updated record on mortality rates helps the Ministry of Health aggregate the factors causing the death to develop programs that address causes of death and improve the health of its citizens. In addition to using the data to monitor the causes of death, data on mortality registration help the Ministry of Health to detect the demographic trends in terms of gender and age of the population. This information will also inform the government planning on improving the healthcare sector and overall life to prevent the occurrence of such deaths in the future.

The results on trends concurred with the findings of Conrad et al. (2019) and Vandoros (2020), who established that reporting and keeping updated data on mortality in terms of age and gender helped in government planning and resource allocation in healthcare to improve services and improve the quality of life to minimize the number of deaths in a particular population.

## Limitations of the Study

This study had limitations that may have impacted the findings. Although I reached saturation with ten participant interviews, the first limitation was the sampling technique I employed for the study. When selecting the population of interest, I used the purposive and snowball sampling techniques, where I relied on the participants to help in the identification of other participants with the required expertise and experience on the topic of interest (Parker et al., 2019). Even though these sampling techniques convenient and cost-effective and allowed a quick means to obtain the required sample, it did not guarantee that the participants included in the study would have the information that I was looking for (Bhardwaj, 2019). Further it could have restricted participation to a specific group of friends with similar perspectives on the study topic, thus limiting the opportunity to speak to a diverse group of participants.

The second limitation was the willingness of the participants identified to participate in the study. According to Parker et al., (2019), qualitative studies depend on the willingness of identified participants to willingly present themselves at the interview venue at the required time. This kind of inconvenience could have potential impact on the availability of interview participants. It is a limitation especially when the number of available participants is limited. The third limitation was the fact that qualitative research quality heavily depends on the researcher and may easily be influenced by the researcher personal biases and idiosyncrasies. Such limitation may have negatively influenced my analysis and presentation of findings. Accordingly, Smith et al. (2017) argued that while researchers' biases could be mitigated, they are integral to qualitative research.

## Recommendations

Health education on mortality surveillance is complex due to sensitivities around death in most settings like Machakos County in Kenya. Therefore, health workers will need continuous empowerment to effectively engage communities to understand the public health importance of mortality surveillance and advocate for behavior change toward uptake of death registration service. The findings of this study indicate limited mortality surveillance training opportunities and scarcity of resource material like posters. Evidence shows that institutionalizing health education training during pre-service training and continuous education played a critical role to empower HWs on birth registration and morbidity surveillance. A similar approach will be needed to integrate mortality surveillance topics into HWs training and allocate resources for training material. Such training could cover topics like the importance of mortality surveillance in public health, how to address cultural norms about death, and how to develop key messages and advocacy material on death registration.

Creating awareness on the entire death registration process is necessary for the uptake of the service by the communities. Findings in this study indicate that lack of knowledge on the process of death registration demotivated families from reporting deaths thus limiting the availability of mortality data. Behaviour change communication interventions can be integrated into forums like baraza's that HWs reported as potential platforms for reaching out to the communities. Findings from this study showed that, leaders in the study area had opportunity to bring together communities for meetings. Such leaders can be mobilized to establish a comprehensive strategy for mortality surveillance community education. This is a good opportunity that brings together all stakeholders involved in mortality surveillance at different levels of Machakos county to harmonize strategies for mortality surveillance health education.

Training and simplifying death registration process and lifting burden of reporting mortality data from the families will promote active death reporting in collaboration with HWs. This study findings indicated that uptake of death registration service was affected by the process being complex for community members to follow through. Continuous training will ensure that communities understood the process without mis-interpreting the steps and requirements. Training interventions will require planning effective interventions adapted to the specific needs of the community. According to the study findings, material such a poster, radio messages or talk shows are useful tools for community education and they should be developed with input from HWs and the community own resource person.

Lessons from the Covid 19 pandemic underscore the importance of mortality surveillance as the means to determine the extend and scope of the pandemic in a community. This study identified limitations in the study area to effectively implement mortality surveillance. The finding demonstrates potential under-resourcing of mortality surveillance system in Machakos county. Therefore, it will be important for the leadership of the Machakos county government to receive technical guidance on the importance of investing on a sustainable mortality surveillance system such that in future, mortality surveillance can be integrated as part of routine health system strengthening.

Despite the various findings drawn from the data collected, there is a need for future research to focus on the influence of culture on the reporting and registration of death in African contexts and other ethnographic factors that influence death registration. Although the current study showed that culture influenced the willingness of the members of the community to register deaths, there is a need for extensive qualitative research focused on culture to enhance or impede mortality registration by community members. The current study covered Machakos County, Kenya, and therefore expanding the geographical scope would help address the issues of validity and transferability. It is also important that future scholars consider using mixed methods research to gain more insight into the need and significance of education in mortality surveillance. The qualitative research approach currently used in this study is limited to describing the experiences of healthcare workers. Still, it does not investigate the relationship between mortality surveillance and health improvement, hence the need for alternative research methods to further examine the relationship between mortality surveillance and health improvement.

## Implications of the Study

### Implications for Positive Change

This study focused on understanding health education needs for mortality surveillance and provided evidence that contribute to the improvement of health outcomes in the communities of Machakos County. The study highlighted how health education can improve death registration, which in turn will benefit families who receive death registration certificates when they participate in death registration. Effective mortality surveillance will generate vital statistics data used by government for public health policy and monitoring the impact of the health care system. In addition, improved death registrations at the national level will help the government plan its resource allocation for public health interventions.

The findings identify the need for Machakos County health department to revamp healthcare workers' resources and skills in health education through institutionalized HWs health educational content, improving mortality surveillance training process, and streamline death reporting system. These results are also beneficial to the healthcare fraternity because many HWs lack the necessary training and education to oversee death registrations despite the benefits to public health care systems. Overall, the findings of this study indicate that lack of health education capacity, opportunities, and motivation to engage in mortality surveillance contribute to the low rates of death registration in Machakos County. These findings will promote conversations with Machakos County authorities to review existing health education operating procedures to include mortality surveillance and to provide related training to new and existing members of the health workforce.

The study generates knowledge for county authorities to use in addressing low rates of death in the county and opens dialogue at different levels of health for consultative process to enhance community participation in mortality surveillance. Potential social change action includes the need for the Ministry of Health to establish a consultative process and a defined structure of developing health education material where health workers and communities can share their inputs on topics relevant to health education on mortality surveillance. Existing training program for health workers can be improved by adding specific topics on mortality surveillance. Such topics could cover content on how to address cultural norms on death, develop key messages and means of advocating for the importance of death registration in public health.

### Methodological Implications

The current findings justify qualitative research in understanding the need for education on mortality surveillance from HWs perspective. The qualitative method pointed to the training needs as well as the need to consultations between HWs and communities when developing content for health education. It is important to note that further research could also be developed to evaluate existing government public policy on death registration and how it could be improved to complement the health education provided by HWs. Other larger scale studies will be relevant to understand how widespread gaps in health education on mortality surveillance and the relationship between surveillance data and health improvement efforts are.

## Conclusion

The findings of this study addressed the problem of HWs training needs on mortality surveillance. The study focused on understanding HWs perspectives regarding the need for health education to support mortality surveillance in Machakos County, Kenya. Health workers serve as important agents of health education and promotion within and outside the formal health care sector. This part of their role is less prioritized because according to the study findings they lack material and training for health education on mortality surveillance. Conducting thematic analysis of the collected semi-structured interview data, the study results demonstrated that HWs and communities they serve had limited training opportunities and lacked educational resources on the importance of mortality surveillance in public health. Despite this challenge, HWs expressed strong commitment in conducting health education especially on topics they were trained about. Where they lacked resources, the developed different tactics and identified instances and opportunities through which they could train members of the community.

Further, in terms of improving the healthcare system and knowledge on the cause of death to motivate communities to participate in mortality registration, HWs were keen to use that information to educate the public. However, cultural issues deterred many from participating in health education on death registration due to sensitivities around norms communities attach to death. HWs needed expressed need for support through local leaders and in the design of key messages that speak to the different cultural issues communities attach to death.

Training and support for HWs is important to empower them to participate effectively in improving mortality surveillance. There is a need to continuously address their health education needs by enhancing their capabilities, learning opportunities, and motivation as critical agents of behavior change. Overall, this study has presented a new perspective on the importance of health education in mortality surveillance, thereby necessitating further research to understand different criteria for creating a demand for death registration as part of improving public health systems.

# References

AbouZahr, C., de Savigny, D., Mikkelsen, L., Setel, P. W., Lozano, R., Nichols, E., Notzon, F., & Lopez, A. D. (2015). Civil registration and vital statistics: Progress in the data revolution for counting and accountability. *The Lancet*, *386*(10001), 1373–1385. https://doi-org.ezp.waldenulibrary.org/10.1016/S0140-6736(15)60173-8

Aimee, G., Melanie, M., Dawn, M., & Dunla, G. (2019). Understanding health behavior in pregnancy and infant feeding intentions in low-income women from the UK through qualitative visual methods and application to the COM-B (Capability, Opportunity, Motivation-Behaviour) model. *BMC Pregnancy and Childbirth*, *1*, 1. https://doi-org.ezp.waldenulibrary.org/10.1186/s12884-018-2156-8

Aseyo, R. E., Mumma, J., Scott, K., Nelima, D., Davis, E., Baker, K. K., Cumming, O., & Dreibelbis, R. (2018). Realities and experiences of community health volunteers as agents for behavior change: Evidence from an informal urban settlement in Kisumu, Kenya. *Human Resources for Health*, *16*(1), 53. https://doi-org.ezp.waldenulibrary.org/10.1186/s12960-018-0318-4

Atuhaire, L. K., Nansubuga, E., Nankinga, O., Nviiri, H. N., & Odur, B. (2022). Prevalence and determinants of death registration and certification uptake in Uganda. *PLOS ONE*, *17*(3). https://doi.org/10.1371/journal.pone.0264742

Barker, F., Atkins, L., & de Lusignan, S. (2016). Applying the COM-B behavior model and behavior change wheel to develop an intervention to improve hearing-aid use in adult auditory rehabilitation. *International Journal of Audiology*, *55*, S90–S98. https://doi-org.ezp.waldenulibrary.org/10.3109/14992027.2015.1120894

Barrionuevo, K. Y., de Paula, I. C., Gularte, A., & de Bittencourt, L. S. (2020). Application of COM-B model as a support to Lean Healthcare diagnostic – The case of pharmaceutical assistance process. *Brazilian Journal of Operations & Production Management*, *17*(3). https://doi-org.ezp.waldenulibrary.org/10.14488/BJOPM.2020.038

Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences*, *5*(3), 157. https://doi.org/10.4103/jpcs.jpcs_62_19

Black, R. E., Levin, C., Walker, N., Chou, D., Liu, L., & Temmerman, M. (2016). Reproductive, maternal, newborn, and child health: Key messages from Disease Control Priorities 3rd Edition. *The Lancet*, *388*(10061), 2811–2824. https://doi-org.ezp.waldenulibrary.org/10.1016/S0140-6736(16)00738-8

Bloomberg Philanthropies. (2020). *Data for health*. https://www.bloomberg.org/program/public-health/data-health/

Boateng, D., Wekesah, F., Browne, J. L., Agyemang, C., Agyei-Baffour, P., Aikins, A. de-G., Smit, H. A., Grobbee, D. E., & Klipstein-Grobusch, K. (2017). Knowledge and awareness of and perception towards cardiovascular disease risk in sub-Saharan Africa: A systematic review. PloS One, 12(12), e0189264. https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0189264

Burkholder, G., Cox, K., & Crawford, L. (2016). *The scholar-practitioner's guide to research design*.

Clark, K. R., & Vealé, B. L. (2018). Strategies to enhance data collection and analysis in qualitative research. *Radiologic Technology*, *89*(5), 482CT-485CT.

Cobos, M. D., & de Savigny, D. (2017). Process mapping and modeling: A tool for analyzing and driving health systems to change. In D. de Savigny, K. Blanchet, & T. Adam (Eds), *Applied systems thinking for health systems research: A methodological handbook* (pp. 150–160). Open University Press, McGraw Hill Education.

Conrad, N., Judge, A., Canoy, D., Tran, J., Pinho-Gomes, A.-C., Millett, E. R., Salimi-Khorshidi, G., Cleland, J. G., McMurray, J. J., & Rahimi, K. (2019). Temporal trends and patterns in mortality after incident heart failure. *JAMA Cardiology*, *4*(11), 1102. https://doi.org/10.1001/jamacardio.2019.3593

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.).

Couper, I., Ray, S., Blaauw, D., Ng'wena, G., Muchiri, L., Oyungu, E., Omigbodun, A., Morhason-Bello, I., Ibingira, C., Tumwine, J., Conco, D., & Fonn, S. (2018). Curriculum and training needs of mid-level health workers in Africa: A situational review from Kenya, Nigeria, South Africa, and Uganda. *BMC Health Services Research*, *18*(1), 553. https://doi-org.ezp.waldenulibrary.org/10.1186/s12913-018-3362-9

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing from among five approaches* (2nd ed.). SAGE. J. A. (2018). Collecting qualitative data: A realist approach. The SAGE handbook of qualitative data collection, (pp 19–32).

Creswell, J.W. (2017). *Qualitative Inquiry & Research Design: Choosing Among the Five Approaches.* (pp. 77–83).

De Savigny, D., Riley, I., Chandramohan, D., Odhiambo, F., Nichols, E., Notzon, S., AbouZahr, C., Mitra, R., Cobos, D., Firth S., Maire, N., Sankoh, O., Bronson, G., Setel, P., Byass, P., Jakob, R., Boerma, T., & Lopez, A. D. (2017). Integrating community-based verbal autopsy into civil registration and vital statistics (CRVS): System-level considerations. *Global Health Action, page 10*. https://doi-org.ezp.waldenulibrary.org/10.1080/16549716.2017.1272882

DiCarlo, A., Fayorsey, R., Syengo, M., Chege, D., Sirengo, M., Reidy, W., Otieno, J., Omoto, J., Hawken, MP., & Abrams, E. J. (2018). Lay health worker experiences administering a multi-level combination intervention to improve PMTCT retention. *BMC Health Services Research*, *18*(1), 1–13. https://doi-org.ezp.waldenulibrary.org/10.1186/s12913-017-2825-8

English, M., Mwaniki, P., Julius, T., Chepkirui, M., Gathara, D., Ouma, P. O., Cherutich, P., Okiro, EA., & Snow, R. W. (2018). Hospital mortality–a neglected but rich source of information supporting the transition to higher quality health systems in low- and middle-income countries. *BMC Medicine*, *16*(1), 1–9. https://doi-org.ezp.waldenulibrary.org/10.1186/s12916-018-1024-8

Esamai, F., Nangami, M., Tabu, J., Mwangi, A., Ayuku, D., & Were, E. (2017). A system approach to improving maternal and child health care delivery in Kenya: Innovations at the community and primary care facilities (a protocol). *Reproductive Health*, *14*(1), 1–18. https://doi-org.ezp.waldenulibrary.org/10.1186/s12978-017-0358-6

Fastring, D., Mayfield-Johnson, S., & Madison, J. (2017). Evaluation of a health education intervention to improve knowledge, skills, behavioral intentions, and resources associated with preventable determinants of infant mortality. *Diversity And Equality in Health and Care*, *14*(6), 290–295. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=29333266&site=eds-live&scope=site

Fawaz, M. A., Hamdan-Mansour, A. M., & Tassi, A. (2018). Challenges facing nursing education in the advanced healthcare environment. *International Journal of Africa Nursing Sciences*, *9*, 105–110. https://doi.org/10.1016/j.ijans.2018.10.005

Flannery, C., McHugh, S., Anaba, A.E., Clifford, E. O'Riordan, M., L. C. Kenny, L.C., Byrne, M. (2018). Enablers and barriers to physical activity in overweight and obese pregnant women: An analysis informed by the theoretical domain's framework and COM-B model. *BMC Pregnancy and Childbirth*, (1), 1. https://doi-org.ezp.waldenulibrary.org/10.1186/s12884-018-1816-z

Garenne, M., Collinson, M. A., Kabudula, C. W., Gomez-Olive, F. X., Kahn, K., & Tollman, S. (2016). Completeness of birth and death registration in a rural area of

South Africa: The Agincourt health and demographic surveillance, 1992-2014. *Global Health Action*, *9*(0), 1–10. https://doi-org.ezp.waldenulibrary.org/10.3402/gha.v9.32795

Gatuguta, A., Colombini, M., Seeley, J., Soremekun, S., & Devries, K. (2021). Supporting children and adolescents who have experienced sexual abuse to access services: Community health workers' experiences in Kenya. Child Abuse & Neglect, 116(Part 1). https://doi.org/10.1016/j.chiabu.2019.104244

Ghaffari, M., Rakhshanderou, S., Ramezankhani, A., Noroozi, M., & Armoon, B. (2018). Oral health education and promotion programmes: Meta-analysis of 17-Year intervention. *International Journal of Dental Hygiene*, *16*(1), 59–67. https://doi-org.ezp.waldenulibrary.org/10.1111/idh.12304

Graham-Wisener, Nelson, A. Byrne, I. Islam, C. Harrison, J. Geddis, & E. Berry. (2022). Understanding public attitudes to death talk and advance care planning in Northern Ireland using health behaviour change theory: a qualitative study. BMC Public Health, 22(1), 1–19. https://doi.org/10.1186/s12889-022-13319-1

Gupta, S. (2017). Ethical issues in designing internet-based research: Recommendations for good practice. *Journal of Research Practice, 13*(2), 1-14.

Hadi, M. A., & Jose C., S. (2016). Ensuring rigour and trustworthiness of qualitative research in clinical pharmacy. *International Journal of Clinical Pharmacy, 3,* 641. https://doi-org.ezp.waldenulibrary.org/10.1007/s11096-015-0237-6

Handley, M. A., Harleman, E., Gonzalez-Mendez, E., Stotland, N. E., Althavale, P., Fisher, L., Martinez, D., Ko, J., Sausjord, I., & Rios, C. (2016). Applying the

COM-B model to creation of an IT-enabled health coaching and resource linkage program for low-income Latina moms with recent gestational diabetes: The STAR MAMA program. *Implementation Science*, *11*. https://doi-org.ezp.waldenulibrary.org/10.1186/s13012-016-0426-2

Hashi, A., Kumie, A., & Gasana, J. (2017). Hand washing with soap and WASH educational intervention reduces under-five childhood diarrhoea incidence in Jigjiga District, eastern Ethiopia: A community-based cluster randomized controlled trial. *Preventive Medicine Reports*. *6*(C), 361–368. doi: 10.1016/j.pmedr.2017.04.011

Horii, N., Habi, O., Dangana, A., Maina, A., Alzouma, S., & Charbit, Y. (2016). Community-based behavior change promoting child health care: A response to socio-economic disparity. *Journal of Health Population and Nutrition, 35*. https://doi-org.ezp.waldenulibrary.org/10.1186/s41043-016-0048-y

Hutain, J., Perry, H. B., Koffi, A. K., Christensen, M., O’Connor, E. C., Jabbi, S.-M. B.-B., Samba, T. T., Kaiser, R., & Cummings O’Connor, E. (2019). Engaging communities in collecting and using results from verbal autopsies for child deaths: An example from urban slums in Freetown, Sierra Leone. *Journal of Global Health*, *9*(1), 1–11. https://doi-org.ezp.waldenulibrary.org/10.7189/jogh.09.010419

Izudi, J., Akwang, D. G., McCoy, S. I., Bajunirwe, F., & Kadengye, D. T. (2019). Effect of health education on birth preparedness and complication readiness on the use of maternal health services: A propensity score-matched analysis. *Midwifery*, *78*, 78–84. https://doi-org.ezp.waldenulibrary.org/10.1016/j.midw.2019.08.003

Jackson, D., Wenz, K., Muniz, M., Abouzahr, C., Schmider, A., Braschi, M. W., Kassam, N., Diaz, T., Mwamba, R., Setel, P., & Mills, S. (2018). Civil registration and vital statistics in health systems. *Bulletin of the World Health Organization*, 96(12), 861–863. https://doi.org/10.2471/BLT.18.213090

Jennifer Bryce, Agbessi Amouzou, Cesar G Victora, Gareth Jones, Romesh Silva, Kenneth Hill, Robert E Black, & RMM Working Group. (2016). "Real-Time" Monitoring of Under-Five Mortality: Lessons for Strengthened Vital Statistics Systems. PLoS Medicine, 13(1), e1001904. https://doi.org/10.1371/journal.pmed.1001904

Jepkosgei, J., Nzinga, J., Adam, M. B., & English, M. (2022). Exploring healthcare workers' perceptions on the use of morbidity and mortality audits as an avenue for learning and care improvement in Kenyan hospitals' newborn units. *BMC Health Services Research*, *22*(1). https://doi.org/10.1186/s12913-022-07572-8

Joos, O., Amouzou, A., Silva, R., Banda, B., Park, L., Bryce, J., Kanyuka, M., & RMM Malawi Working Grp. (2016). Strengthening community-based vital events reporting for real-time monitoring of under-five mortality: Lessons learned from the Balaka and Salima Districts in Malawi. *PLOS ONE*, *11*(1). https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0138406

Karinja, M., Schlienger, R., Pillai, G. C., Esterhuizen, T., Onyango, E., Gitau, A., & Ogutu, B. (2020). Risk reduction of diarrhea and respiratory infections following a community health education program-a facility-based case-control study in rural parts of Kenya. *BMC Public Health*, *20*(1), 1–9. https://doi-org.ezp.waldenulibrary.org/10.1186/s12889-020-08728-z.

Keats, E. C., Macharia, W., Singh, N. S., Akseer, N., Ravishankar, N., Ngugi, A. K., Rizvi, A., Khaemba, E. N., Tole, J., & Bhutta, Z. A. (2018). Accelerating Kenya's progress to 2030: Understanding the determinants of under-five mortality from 1990 to 2015. *BMJ Global Health, 3*(3). https://doi.org/10.1136/bmjgh-2017-000655

Khong, L. A. M., Berlach, R. G., Hill, K. D., & Hill, A.-M. (2018). Design and development of a theory-informed peer-led falls prevention education programme to translate evidence into practice: A systematic approach. *International Journal of Health Promotion & Education, 56*(4/5), 195.

Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of qualitative descriptive studies: A systematic review. *Research in nursing & health, 40*(1), 23–42. https://doi.org/10.1002/nur.21768

Korstjens, I., & Moser, A. (2017). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice, 24*(1), 120–124.

Kruk, M. E., Gage, A. D., Joseph, N. T., Danaei, G., García-Saisó, S., & Salomon, J. A. (2018). Mortality due to low-quality health systems in the universal health coverage era: A systematic analysis of amenable deaths in 137 countries. *Lancet*

*392*(10160), 2203–2212. https://doi-org.ezp.waldenulibrary.org/10.1016/S0140-6736(18)31668-4

Langer P., N., Reid, A., & Simovska, V. (2018). Shades of criticality in health and wellbeing education. *Journal of Curriculum Studies, 50*(6), 733–753. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=eric&AN=EJ1200136&site=eds-live&scope=site

Lawn, J. E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., Vicki, F., Frederik, F.J., Zeshan, Q., Claire, C., Shiekh, S., & Bianchi, F. (2016). Stillbirths: Rates, risk factors, and acceleration towards 2030. *The Lancet, 387*(10018), 587–603.

Lopez A. D., McLaughlin D., Richards N. (2020) Reducing ignorance about who dies of what: Research and innovation to strengthen CRVS systems. *BMC Med. 2020;18(1), 58*. Published 2020 Mar 9. doi:10.1186/s12916-020-01526-9

Love, K. R., Karin, E., Morogo, D., Toroitich, F., Boit, J. M., Tarus, A., Barasa, F. A., Goldstein, N. E., Koech, M., & Vedanthan, R. (2020). “To speak of death is to invite it”: Provider perceptions of palliative care for cardiovascular patients in Western Kenya. *Journal of Pain and Symptom Management*. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jpainsymman.2020.05.003

Lowe, A., Norris, A., Farris, A., & Babbage, D. (2018). Quantifying thematic saturation in qualitative data analysis. *Field Methods, 30*(3), 191–207.

Maduekwe, N. I., Banjo, O. O., & Sango apo, M. O. (2017). The Nigerian civil registration and vital statistics system: Contexts, institutions, operation. *Social Indicators Research*, 134(2), 651–674.

Maidment, D. W., Coulson, N. S., Wharrad, H., Taylor, M., & Ferguson, M. A. (2020). The development of an mHealth educational intervention for first-time hearing aid users: Combining theoretical and ecologically valid approaches. *International Journal of Audiology 59*(7), 492–500. doi: 10.1080/14992027.2020.1755063.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2018). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research, 26*(13), 1753–1760. https://doi-org.ezp.waldenulibrary.org/10.1177/1049732315617444

Mantulak, A., & Nicholas, D. B. (2016). "We're not going to say it's suffering; we're going to say it's an experience": The lived experience of maternal caregivers in pediatric kidney transplantation. *Social Work in Health Care*, *55*(8), 580–594. https://doi-org.ezp.waldenulibrary.org/10.1080/00981389.2016.1208712

Marshall, C., & Rossman, G. B. (2016). Designing qualitative research (6th ed.). SAGE.

McDonagh, L. K., Saunders, J. M., Cassell, J., Curtis, T., Bastaki, H., Hartney, T., & Rait, G. (2019). Application of the COM-B model to barriers and facilitators to chlamydia testing in general practice for young people and primary care practitioners: A systematic review. *Implementation Science, 13*. https://doi-org.ezp.waldenulibrary.org/10.1186/s13012-018-0821-y

Melinda K Munos, Alain K Koffi, Hamadoun Sangho, Mariam Guindo Traoré, Masseli Diakité, Romesh Silva, & Mali RMM Working Group. (2015). Strengthening Community Networks for Vital Event Reporting: Community-Based Reporting of Vital Events in Rural Mali. PLoS ONE, 10(11), e0132164. https://doi.org/10.1371/journal.pone.0132164

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science, 6*(1), 42–53. https://doi-org.ezp.waldenulibrary.org/10.1186/1748-5908-6-42

Mikkelsen, L., Phillips, D. E., AbouZahr, C., Setel, P. W., De Savigny, D., Lozano, R., & Lopez, A. D. (2015). A global assessment of civil registration and vital statistics systems: Monitoring data quality and progress. *The Lancet*, *386*(10001), 1395–1406.

Mitchell, C., McMillan, B., Boyd, J., Easton, K., & Delaney, B. (2020). Utility of the COM-B model in identifying facilitators and barriers to maintaining a healthy postnatal lifestyle following a diagnosis of gestational diabetes: A qualitative study. *BMJ Open*, *10*(8). https://doi-org.ezp.waldenulibrary.org/10.1136/bmjopen-2020-037318

Morgan, D. L. (2018). Themes, theories, and models. *Qualitative Health Research*, *28*(3), 339–345. doi:10.1177/1049732317750127

Nichols, E. K., Ragunanthan, N. W., Ragunanthan, B., Gebrehiwet, H., & Kamara, K. (2019). A systematic review of vital events tracking by community health agents.

*Global Health Action*, *12*(1), 1–11. https://doi-org.ezp.waldenulibrary.org/10.1080/16549716.2019.1597452

Nickbakht, M., Meyer, C., Scarinci, N., & Beswick, R. (2020). Exploring factors influencing the use of an eHealth intervention for families of children with hearing loss: An application of the COM-B model. *Disability and Health Journal, 13*(4). https://doi-org.ezp.waldenulibrary.org/10.1016/j.dhjo.2020.100921

Norwegian Refugee Council. (2015). *Registering rights: Syrian refugees and the documentation of births, marriages, and deaths in Jordan.* https://hrp.law.harvard.edu/wp-content/uploads/2015/11/Registering-rights-report-NRC-IHRC-October20151.pdf

Nuriddin, A., Jalloh, M. F., Meyer, E., Bunnell, R., Bio, F. A., Jalloh, M. B., Sengeh, P., Hageman, K. M., Carroll, D. D., Conteh, L., & Morgan, O. (2018). Trust, fear, stigma, and disruptions: Community perceptions and experiences during periods of low but ongoing transmission of Ebola virus disease in Sierra Leone, 2015. *BMJ Global Health, 3*(2). https://doi-org.ezp.waldenulibrary.org/10.1136/bmjgh-2017-000410

Okeke, C. O., Ibenwa, C. N., & Okeke, G. T. (2017). Conflicts between African traditional religion and Christianity in eastern Nigeria: The Igbo example. *SAGE Open*, *7*(2), 215824401770932. https://doi.org/10.1177/2158244017709322

Olaniran, A., Madaj, B., Bar-Zev, S., & van den Broek, N. (2019). The roles of community health workers who provide maternal and newborn health services: case studies from Africa and Asia. BMJ Global Health, 4(4), e001388. https://doi.org/10.1136/bmjgh-2019-001388

Ormel, H., Kok, M., Kane, S., Ahmed, R., Chikaphupha, K., Rashid, S. F., Gemechu, D., Otiso, L., Sidat, M., Theobald, S., Taegtmeyer, M., & Kining, K.d. (2019). Salaried and voluntary community health workers: Exploring how incentives and expectation gaps influence motivation. *Human Resources for Health, 17*(1), 1–12. https://doi-org.ezp.waldenulibrary.org/10.1186/s12960-019-0387-z.

Oung, M. T., Richter, K., Prasartkul, P., Aung, Y., Soe, K. T., Tin, T. C., & Tangcharoensathien, V. (2019). Reliable mortality statistics in Myanmar: A qualitative assessment of challenges in two townships. *BMC Public Health*, *19*(1), 356. https://doi-org.ezp.waldenulibrary.org/10.1186/s12889-019-6671-y

Owek, C. J., Oluoch, E., Wachira, J., Estambale, B., & Afrane, Y. A. (2016). Community perceptions and attitudes on malaria case management and the role of community health workers. *Malaria Journal*, *16*. https://doi-org.ezp.waldenulibrary.org/10.1186/s12936-017-1916-7

Oxley, L. (2016). An examination of interpretative phenomenological analysis (IPA). *Educational & Child Psychology, 33*(3), 55–62.

Parker, C., Scott, S., & Geddes, A. (2019). Snowball sampling. *SAGE Research Methods Foundations.* 1–8. https://doi.org/http://dx.doi.org/10.4135/

Pedersen, B., Delmar, C., Falkmer, U., & Grønkjær, M. (2016). Bridging the gap between interviewer and interviewee: Developing an interview guide for individual interviews by means of a focus group. *Scandinavian Journal of Caring Sciences,* *30*(3), 631–638. doi:10.1111/scs.12280

Peralta A, Benach J, Borrell C, et al., (2019) Evaluation of the mortality registry in Ecuador (2001–2013) - Social and geographical inequalities in completeness and quality. *Population Health Metrics*, *17*(1), 1–12. https://doi-org.ezp.waldenulibrary.org/10.1186/s12963-019-0183-y

Pillay-van Wyk, V., Msemburi, W., Laubscher, R., Dorrington, R. E., Groenewald, P., Glass, T., Nojilana, B., Joubert, J. D., Matzopoulos, R., Prinsloo, M., Nannan, N., Gwebushe, N., Vos, T., Somdyala, N., Sithole, N., Neethling, I., Nicol, E., Rossouw, A., & Bradshaw, D. (2016). Mortality trends and differentials in South Africa from 1997 to 2012: second National Burden of Disease Study. The Lancet Global Health, 4(9), e642–e653. https://doi.org/10.1016/S2214-109X(16)30113-9.

Pinkham, L., Botelho, F., Khan, M., Guadagno, E., & Poenaru, D. (2022). Teaching trauma in resource-limited settings: A scoping review of pediatric trauma courses. *World Journal of Surgery*, *46*(5), 1209–1219. https://doi.org/10.1007/s00268-021-06419-3

Rubinstein, H., Marcu, A., Yardley, L., & Michie, S. (2015). Public preferences for vaccination and antiviral medicines under different pandemic flu outbreak scenarios. *BMC Public Health*, *15*, 190. https://doi-org.ezp.waldenulibrary.org/10.1186/s12889-015-1541-8

Sifuna, P., Otieno, L., Ogwang, S., Ogutu, B., Andagalu, B., Owuoth, J., Singoei, V., Cowden, J., & Otieno, W. (2018). Cause-specific mortality in the Kombewa health and demographic surveillance systems site, rural Western Kenya from

2011–2015. *Global Health Action*, *11*(1), 1442959. https://doi-org.ezp.waldenulibrary.org/10.1080/16549716.2018.1442959

Silva, R., Amouzou, A., Munos, M., Marsh, A., Hazel, E., Victora, C., Black, R., Bryce, J., & RMM Working Group. (2016). Can community health workers report accurately on births and deaths? Results of field assessments in Ethiopia, Malawi, and Mali. *PLoS ONE, 11(1), e0144662. https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0144662*.

Smith, H., Ameh, C., Godia, P., Maua, J., Bartilol, K., Amoth, P. van den Broek, N. (2017). Implementing maternal death surveillance and response in Kenya: Incremental progress and lessons learned. *Global Health, Science and Practice*, *5*(3), 345–354. https://doi-org.ezp.waldenulibrary.org/10.9745/GHSP-D-17-00130

Stephane Helleringer, Daniel Arhinful, Benjamin Abuaku, Michael Humes, Emily Wilson, Andrew Marsh, Adrienne Clermont, Robert E Black, Jennifer Bryce, & Agbessi Amouzou. (2018). Using community-based reporting of vital events to monitor child mortality: Lessons from rural Ghana. PLoS ONE, 13(1), e0192034. https://doi.org/10.1371/journal.pone.0192034

Sumankuuro, J., Crockett, J., & Wang, S. (2017). Maternal health care initiatives: Causes of morbidities and mortalities in two rural districts of Upper West Region, Ghana. *PLOS ONE*, *12*(8). https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0183644.

Surr, C. A., Parveen, S., Smith, S. J., Drury, M., Sass, C., Burden, S., & Oyebode, J. (2020). The barriers and facilitators to implementing dementia education and training in health and social care services: A mixed-methods study. *BMC Health Services Research*, *20*(1), 1–10. https://doi-org.ezp.waldenulibrary.org/10.1186/s12913-020-05382-4.

Tim Adair, & Alan D Lopez. (2021). Generating age-specific mortality statistics from incomplete death registration data: two applications of the empirical completeness method. Population Health Metrics, 19(1), 1–11. https://doi.org/10.1186/s12963-021-00262-3

Tshililo, A. R., Mangena-Netshikweta, L., Nemathaga, L. H., & Maluleke, M. (2019). Challenges of primary healthcare nurses regarding the integration of HIV and AIDS services into primary healthcare in Vhembe district of Limpopo province, South Africa. *Curationis*, *42*(1), 1–6. https://doi-org.ezp.waldenulibrary.org/10.4102/curationis.v42i1.1849

UNFPA and UNESCAP (2017). *Births and deaths statistics report 2014–2015.* Timor-Leste General Directorate of Statistics.

UNICEF (2017). *Better data for women and children: Strengthening civil registration and vital statistics across the continuum of care.* Technical Meeting Report: October 4–6, 2016. New York, USA.

United Nations Statistical Division. (2018). *Civil registration systems*. United Nations. Statistical Division. (2001). *Principles and recommendations for a vital statistics system* (Revision 3). UN. https://unstats.un.org/unsd/demographic/standmeth/principles/M19Rev3en.pdf

Vandoros, S. (2020). Excess mortality during the COVID-19 pandemic: Early evidence from England and Wales. *Social Science & Medicine*, *258*, 113101. https://doi.org/10.1016/j.socscimed.2020.113101

Vaughn, P., & Turner, C. (2016). Decoding via coding: Analyzing qualitative text data through thematic coding and survey methodologies. *Journal of Library Administration*, *56*(1), 41–51.

Vogl, S., Zartler, U. Schmit, E., & Rieder, I. (2017). Developing an analytical framework for multiple perspectives, qualitative longitudinal interviews. *International Journal of Social Research Methodology*, *21*(2), 177—190.

Wakibi, S., & Ngure, E. (2021). An assessment of knowledge, attitude, and practices of birth and death registration in Kilifi County in the coastal region in Kenya. *BioMed Research International*, 2021, 1–8. https://doi.org/10.1155/2021/9963703

West, R., & Michie, S. (2020) A brief introduction to the COM-B model of behaviour and the PRIME Theory of motivation [v1]. *Qeios, Article*. https://doi.org/10.32388/WW04E6.

West, R., Michie, S., Rubin, G. J., & Amlôt, R. (2020). Applying principles of behaviour change to reduce SARS-CoV-2 transmission. Nature Human Behaviour, 4(5), 451–459. https://doi.org/10.1038/s41562-020-0887-9

Willis, D. G., Sullivan-Bolyai, S., Knafl, K., & Cohen, M. Z. (2016). Distinguishing features and similarities between descriptive phenomenological and qualitative description research. *Western Journal of Nursing Research*, *38*(9), 1185–1204. https://doi-org.ezp.waldenulibrary.org/10.1177/0193945916645499

Winn, L. K., Lesser, A., Menya, D., Baumgartner, J. N., Kirui, J. K., Saran, I., Prudhomme-O'Meara, W., & Kipkoech Kirui, J. (2018). Motivation and satisfaction among community health workers administering rapid diagnostic tests for malaria in Western Kenya. *Journal of Global Health*, *8*(1), 1–12. https://doi-org.ezp.waldenulibrary.org/10.7189/jogh.06.0207028.010401

World Bank (2018a). *Global civil registration and vital statistics*. https://www.worldbank.org/en/topic/health/brief/global-civil-registration-and-vital-statistics.

World Bank. (2018b). *Rural population (% of the total population)*. Retrieved 2019, from https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

Wysokińska, Z. (2017). Millennium Development Goals/UN and Sustainable Development Goals/UN as instruments for realizing sustainable development concept in the global economy. *Comparative Economic Research, 20*(1), 101–118. https://doi-org.ezp.waldenulibrary.org/10.1515/cer-2017-0006

Yaya, Y., Data, T., & Lindtjørn, B. (2015). Maternal mortality in rural south Ethiopia: Outcomes of community-based birth registration by health extension workers. *PloS One, 10*(3), e0119321. https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0119321

# Appendix A: Invitation Email

Dear Dr/Mrs/Ms.…………………………………………………………………….…

Greetings, my name is James Mwanza. I am a Ph.D. student at Walden University, studying Health Education and Promotion. I am carrying out a study in partial fulfillment of the requirements for the award of my degree. My research is on understanding health education needs for mortality surveillance in Machakos County, Kenya. My participant selection criteria are that one must be a trained health professional and provide health education to the community or the population in your duty station. I am inviting you to participate in this because of your function as a health professional involved in health education.

I would like to interview you by telephone or Zoom call at a time that is convenient for you. I have developed a set of questions to collect in-depth information on my study topic. Interviews will last approximately 45 minutes. During interviews, I will need to record our discussion so that I can transcribe to obtain information-rich data for my analysis.

Please note that your participation in the study is voluntary, and all your views and information you will provide will be treated with the utmost confidentiality. I wish to remind you that you are free to discontinue your participation in the study at any time. All information you will provide will be kept in a secured place, and only I will have access to the information for my study purposes. I will keep your identity confidential, and the information collected will be de-identified. I will contact you by phone to ascertain your participation and go through any questions you may have. Thank you for considering participating in my research.

Sincerely

James Mwanza

Phone number: +1 603 233 8924

Email james.mwanza2@waldenu.edu

## Appendix B: Interview Guide

**Study topic:** Exploring Health Education Needs for Mortality Surveillance in Machakos County, Kenya

**Participant Pseudonym: ……………………………………………………………..**

**Participant Email: ………………………….. Tel: …………………………………**

**Researcher Name:** James Mwanza

**Date of Interview: ………………………………………………………………….**

**Opening Statement**

Greetings, I would like to introduce myself again. I am James Mwanza, a Ph.D. student at Walden University, studying Health Education and Promotion. Thank you for consenting to participate in this interview. As I mentioned when you completed the consent form, this research is part of my doctoral studies, which I am conducting in Machakos County. The focus of my research is to understand health education needs for mortality surveillance in the County.

I would like to remind you that your participation in the study is voluntary. All your views and information you will provide will be used only for my research and will be treated with the utmost confidentiality. I also wish to remind you that you are free to discontinue your study participation at any stage of the interview. The finding from my research can help improve health education activities in your area of work.

This interview will take about 45 minutes. If you feel tired or would like to stop the interview at any time, please let me know, and we can stop and continue the next time at your convenience. I will also be using a voice recorder to capture all the information you provide correctly. I will now begin this interview.

**Participant demographic**

1. Will you start by telling me about yourself?

   **Probs:** how old are you, where do you work, what is your training background, for how long have you been working in health sector?

2. Tell me about your community?

   **Probs:** how would you describe your community? What are the reasons for describing your community that way? What is your relationship with the community? Who are the people you work with from the community? What topics do you cover during health education sessions in the community?

**Enabling Capabilities on health education for death reporting**

3. Tell me what you know about the public health importance of reporting deaths by name, sex, and place of occurrence?

   **Probs:** What type of health education material are you aware of? Where do you get the material from? What is your contribution to developing these health education materials?

4. What training have you received on the public health importance of death reporting?

   **Prob:** What can you do to enhance your skills in health education on death reporting?

**Opportunities to conduct health education on mortality surveillance**

5. On what occasion do you engage individuals or communities for health education?

   **Prob:** when would you consider a topic on the importance of death reporting?

6. What challenges do you face when conducting health education?

   **Probs:** How have these challenges affected death notification for mortality surveillance? What actions would you suggest overcoming these challenges?

**Motivation factors**

7. What targets do you have for conducting health education?

   **Prob:** How are the targets set? In what way are you involved in developing health education targets?

8. What would you consider doing to increase your health education skills on the public health importance of death reporting in the community?

   **Probs:** What support would you require to enhance your health education skills? Why do you need such skills?

**Closing question:** Is there anything else you'd like to tell me about your experience in contacting health education regarding death registration?

**Closing statement**

Thanks for your time to participate in my interview session. I appreciate all your thoughtful insights as they will go a long way to inform my study topic. I will maintain the confidentiality of all the information you have shared with me and use it only for my study purpose. I will be more than willing to share with you my study findings. Are you ok for me to make follow up on your interview in case I need additional information?

This Interview will end now at time: …………………

# Appendix C: Kenya AMREF IRB Approval

amref
health africa

Amref Health Africa in Kenya

**REF: AMREF – ESRC P989/2021**

June 25, 2021

James Mwanza
Walden University
100 S Washington Ave Suite 1210, Minneapolis, MN 55401
United States
Tel: +16032338924
Email: james.mwanza2@waldenu.edu

Dear James Mwanza,

**RESEARCH PROTOCOL: EXPLORING HEALTH EDUCATION NEEDS FOR MORTALITY SURVEILLANCE IN MACHAKOS COUNTY, KENYA**

Thank you for submitting your protocol to the Amref Ethics and Scientific Review Committee (ESRC).

This is to inform you that the ESRC has reviewed and approved your protocol. The approval period is from June 25, 2021 to June 24, 2022, and is subject to compliance with the following requirements:

a) Only approved documents (including informed consents, study instruments, advertising materials, material transfer agreements etc.) will be used.
b) All changes including (amendments, deviations, violations etc.) are submitted for review and approval by Amref ESRC before implementation.
c) Death and life-threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the Amref ESRC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to Amref ESRC within 72 hours.
e) Clearance for export of biological specimen must be obtained from the relevant government authorities for each batch of shipment/export.
f) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
g) In case of late renewal, the Amref ESRC shall not be held responsible for any severe adverse events (SAEs) that may occur as a result of research activities that were carried out after the expiry of approval.
h) Submission of an executive summary report within 90 days upon completion of the study to the Amref ESRC.
i) All government regulations for prevention and control of the spread of COVID-19 including social distancing, provision of personal protective equipment for participants and research assistants should be adhered to during data collection. All research assistants should be monitored for COVID 19 symptoms and referred for testing in case they present with symptoms.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and innovation (NACOSTI) https://oris.nacosti.go.ke/ and obtain other clearances needed.

Please do not hesitate to contact the ESRC Secretariat (esrc.kenya@amref.org) for any clarification or query.

Yours sincerely,

25 Jun 2021

Prof. Mohamed Karama
Chair, Amref ESRC
CC: Samuel Muhula, Monitoring & Evaluation and Research Manager, Amref Health Africa in Kenya

Winner of the Gates Award for Global Health

# Appendix D: Government of Kenya Research Authorization Letter

**REPUBLIC OF KENYA**

**GOVERNMENT OF MACHAKOS COUNTY**
**DEPARTMENT OF HEALTH & EMERGENCY SERVICES**
***Office of Director Medical Services***

Telephone: +254-44-20575
Fax: 254-44-20655
When replying please quote

Machakos Highway
P.O. Box 2574-90100
**Machakos, Kenya**

**Ref No.** MKS/DHES/RSCH/VOL 1/55

**19th July 2021**

Dear Dr. Mwanza,

**RE: LETTER OF AUTHORIZATION FOR CONDUCTING PROPOSED RESEARCH**

The Department of Health and Emergency Services, Machakos County is keen to collaborate in your study: 'Exploring Health Education Needs for Mortality Surveillance in Machakos County, Kenya'.

Note is taken of the letter of Ethical clearance from Amref ESRC, REF: AMREF-ESRC P989/2021 dated 25th June, 2021 as well as the Research Licence from the National Commission for Science, Technology & Innovation number NACOSTI/P/21/11567 dated 16th July 2021.

You are hereby authorized to proceed with the research and urged to share the findings with the Department of Health and Emergency Services; Machakos County, through this office.

DIRECTOR
19 JUL 2021

Dr. Sharon Mweni
Director Medical Services
**MACHAKOS COUNTY**

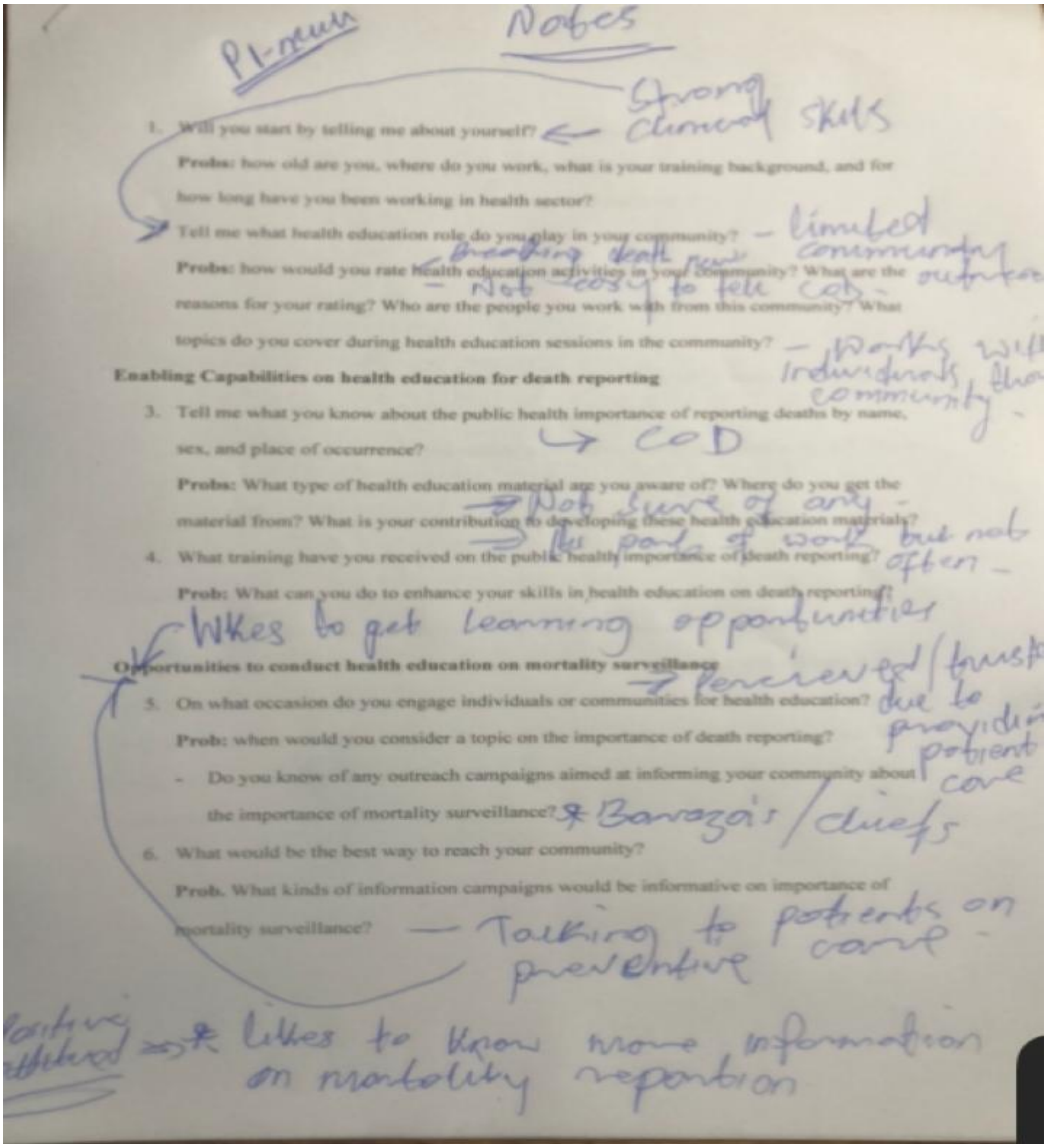
Cc:

-County Executive Committee Member – Health

-Chief Officer – Medical Services

-Chief Officer – Public health & Community Outreach

# Appendix E: Example Field Note



P1-nurse

Notes

Strong clinical skills

1. Will you start by telling me about yourself?

   **Probs:** how old are you, where do you work, what is your training background, and for how long have you been working in health sector?

Tell me what health education role do you play in your community? – limited community outreach

**Probs:** how would you rate health education activities in your community? What are the reasons for your rating? Who are the people you work with from this community? What topics do you cover during health education sessions in the community?

Breaking death news – Not easy to tell COD

– Working with individuals than community –

**Enabling Capabilities on health education for death reporting**

3. Tell me what you know about the public health importance of reporting deaths by name, sex, and place of occurrence? → COD

   **Probs:** What type of health education material are you aware of? Where do you get the material from? What is your contribution to developing these health education materials?

   → Not sure of any –

   → Its part of work but not often –

4. What training have you received on the public health importance of death reporting?

   **Prob:** What can you do to enhance your skills in health education on death reporting?

   Likes to get learning opportunities

**Opportunities to conduct health education on mortality surveillance**

→ Perceived trust due to providing patient care

5. On what occasion do you engage individuals or communities for health education?

   **Prob:** when would you consider a topic on the importance of death reporting?

   - Do you know of any outreach campaigns aimed at informing your community about the importance of mortality surveillance? * Baraza's / chiefs

6. What would be the best way to reach your community?

   **Prob.** What kinds of information campaigns would be informative on importance of mortality surveillance? — Talking to patients on preventive care –

Positive attitude ⇒ * Likes to know more information on mortality reportion