Impact of Health Service Delivery on Quality-of-Life Outcomes in Non-Communicable Disease Management in Mombasa County in Kenya.

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DECLARATION

I hereby declare that this work has not previously been submitted to and approved for degree award by this or any other university. To the best of my knowledge and belief, the proposal contains no previously published or written material by another person, unless specifically stated in the proposal.

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ABSTRACT

This study investigates the impact of healthcare service delivery on quality-of-life outcomes among patients with hypertension and diabetes in Mombasa County, Kenya, identifying potential barriers and facilitators affecting their management of non-communicable diseases. Using a descriptive cross-sectional design, data was collected through structured surveys from patients at Coast General Teaching and Referral Hospital. The study was guided by the Availability, Accessibility, Acceptability, and Quality (AAAQ – Triple A, Q) framework and the WHOQOL-BREF tool. Findings revealed that patients face multiple barriers to effective care, including inadequate staffing, limited availability of essential drugs, and insufficient diagnostic services. Accessibility challenges such as high transport costs, limited insurance coverage, and geographic distance, especially for rural patients, further hindered timely care. Cultural acceptability also emerged as a concern, with many patients reporting that healthcare providers lacked cultural sensitivity, empathy, and effective communication. These factors not only impacted clinical outcomes but also influenced emotional well-being, social interactions, and environmental satisfaction, which are key aspects of quality of life. While availability and accessibility were prioritized, the study also found that the acceptability and quality of care significantly affected trust, satisfaction, and adherence to treatment. The study calls for targeted, patient-centred interventions such as culturally competent training for healthcare providers, investment in healthcare infrastructure, and policy reforms to promote equitable access. These improvements are essential to strengthening non-communicable disease care and enhancing the quality of life for affected individuals in Mombasa County.

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LIST OF ABBREVIATIONS

AAAQ - Availability, Accessibility, Acceptability, and Quality

CVD - cardiovascular disease

NCD - Non-Communicable Disease

UHC - Universal Health Coverage

ICESCR - International Covenant on Economic, Social, and Cultural Rights

KShs - Kenyan Shillings

COVID-19 - Coronavirus Disease 2019

QoL- Quality of Life

HRQoL- Health-related quality of life

LMIC- Low- and middle-income countries

MOH- Ministry of Health

NHIF- National Hospital Insurance Fund

GDP- Gross Domestic Product

KEY TERMS AND CONCEPTS

Acceptability: Majorly centres on cultural sensitivity, gender responsiveness, and the level of acceptance of health care services by the population they cater to.

Accessibility: The ease at which individuals can access healthcare services, including physical access to facilities, affordability of services, and the availability of information about health services.

Availability: The abundance of healthcare services and resources, including essential facilities, medications, and trained staff especially during the urgent need for effective care.

Chronic Diseases: Long-term health diseases like diabetes and high blood pressure primarily requiring constant treatment and care.

Descriptive Cross-Sectional Study: A research method that gathers data on a population or phenomenon at a certain time to determine its characteristics, especially when a researcher needs to detect patterns and connections.

Health Literacy: Individuals' ability to obtain, understand, and use health information to make critical health and medical care decisions.

Health service delivery refers to offering needed assistance to patients from admission until discharge, encompassing inpatient and outpatient services. This includes the entire continuum of care patients receive, influenced by the opinions of service providers and patients.

Hypertension: A health condition charactersised by persistent high blood pressure that if left uncontrolled can culminate result in serious health problems.

Non-Communicable Diseases (NCDs): Entail a group of conditions that do not emerge from infections and typically require continuous medical care. Examples include cancers, cardiovascular diseases, chronic respiratory diseases, diabetes, and hypertension.

Perception: in healthcare refers to how individuals interpret and evaluate their experiences with health services, encompassing their beliefs, emotions, and behaviors, which influence their satisfaction, trust, and health-seeking actions.

Policy Decisions: Choices on resource allocation, health program support, and policy implementation made by policymakers, majorly to enhance population health.

Quality of Care: The degree to which healthcare services follow established guidelines and efficiently address patients' requirements, including safety, effectiveness, and patient-centred care.

Resource Allocation: The effective distribution of limited funds, personnel, and equipment to different healthcare services and programs to enhance health outcomes.

Self-Reported Data: Information provided by individuals about their own health status, experiences, and behaviors, which can be subject to biases such as social desirability and recall inaccuracies.

Socio-Economic Status: Refers to an individual's or group's social and economic standing about others, usually determined by income, education, and occupation, which can affect their ability to access healthcare services.

Target Population: The set of people that a study intends to examine, in this instance, individuals in Mombasa County who are adults aged 18 and older with hypertension and diabetes.

Universal Health Coverage (UHC): A health system objective that guarantees all people can obtain essential health services without facing financial struggles, aiming to achieve fairness in healthcare access and provision.

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CHAPTER 1

1.1 Background

Globally, every two seconds, a person under 70 passes away from non-communicable diseases (NCDs). Most of these deaths could have been prevented by providing integrated preventive, curative, and palliative healthcare services (WHO, 2017). A class of illnesses known as NCDs are non-infectious or transmissible. NCDs can be divided into four categories: cancer, cardiovascular diseases (such as heart attacks and strokes), chronic respiratory diseases (such as chronic asthma, and obstructed pulmonary disease), and diabetes (WHO, 2022). NCDs have become the leading cause of mortality, morbidity, and disability globally (Gitau, 2020). The prevalence of NCDs has now become a global health problem and poses a threat to the nation's economic development, sustainability, and public health standards, putting them all at risk (WHO, 2022).

The World Health Organisation (WHO) estimated that in 2023, NCDs were directly responsible for 41 million deaths, or 74% of total deaths worldwide. Additionally, 15 million people between the ages of 30 and 69 die prematurely, contributing to 85% of all premature deaths (WHO, 2022). Premature death occurs before a certain age threshold, earlier than expected given population norms, or in a way that increases lifetime inequality within a population (Sørheim, 2024). In low- and middle-income countries (LMICs), 45 percent of NCD deaths occurred before the age of 70 (WHO, 2019). Specific conditions such as high blood pressure (also known as hypertension) and diabetes further aggravate the burden of NCDs. The WHO has estimated that 26% of the world's population or 972 million people have hypertension, 65% living in developing countries. As highlighted by Kheir (2023), this prevalence is expected to increase to 29% by 2025; with a particular increase in LMICs (Kheir, 2023).

Disability-Adjusted Life Years of NCDs across all age groups in Sub-Saharan Africa have increased from 1990 to 2017, with the number rising from 90.6 million to 151.3 million, a 67.0% increase (Kadiri, 2022). Additionally, the proportion of NCDs within Sub-Saharan Africa has increased from 18.6% (1990) to 29.8% (2017), highlighting NCDs' significance in the region. The proportion of NCDs in Sub-Saharan Africa has reached unprecedented levels surpassing the global average and is almost equal to the burden of communicable, maternal, neonatal, and nutritional diseases combined (Kassa, 2019).

The economic burden of NCDs is unsustainable, especially in LMICs, and threatens development (Onyango, 2018). In Kenya, 48.97% of people are impoverished because of NCDs. Households with at least one sick member are 30.58% more likely to be impoverished than those without NCDs (Muriithi, 2016). Productivity losses due to disability, premature deaths, and absenteeism from work amplify the existing social inequities. As a result, this leads to a cycle of underdevelopment, which takes focus away from areas that require funding, such as education and infrastructure, thus, impeding the nation's general economic growth and development. This situation demonstrates the need for comprehensive approaches that consider the health and financial sectors to determine the effects of NCDs on societal progress (Gitau, 2020). Investing in NCDs offers a high return for both health and economic benefits. Priority should be given to including NCDs in universal health coverage (UHC) benefit packages, improving NCD prevention in primary care, and advancing innovation and implementation research (WHO, 2023).

The World Health Assembly in 2000, approved a global strategy for preventing and controlling these diseases, which was a pivotal point, followed by attempts to address the escalating burden. Furthering this initiative, in 2008, the Assembly initiated its first Global Action Plan to address this problem systematically (Boudreaux, 2020). Over the past 20 years, efforts to prevent and control NCDs have been implemented globally, but this has not been enough to lessen their impact as the leading cause of death worldwide. No nation is meeting all nine of the voluntary targets outlined in the Global Action Plan for the Prevention and Control of NCDs 2013–2030, and the world is not on track to meet the United Nations Sustainable Development Goals (SDG) target 3.4, which calls for reducing premature deaths from NCDs (WHO, 2023). The global health landscape is changing rapidly, and NCDs are now the primary factor for morbidity, mortality, and disability (WHO, 2011).

1.1.1 Kenya's Healthcare Landscape

Kenya has a population of around 57 million people (Worldometer, 2025), is ethnically diverse, and has different counties with distinct geographical characteristics and various levels of economic development. This composition has led to a significant variation in the healthcare needs and utilization of the population.

In the referenced year, Kenya spent $95 per person on healthcare, which represents a 9.22% increase from what it spent per person in 2020. (MacroTrends n.d). To address these disparities and improve service delivery, the government undertook a major restructuring of the healthcare system, leading to the creation of 47 semi-independent county governments (Kubai, 2019). The decentralization was implemented to boost efficiency, encourage innovation, and ensure equal access to services while strengthening accountability and transparency. The Kenyan healthcare system's vulnerabilities were exposed by the COVID-19 pandemic. In this case, most people could not afford health insurance, highlighting a significant disparity in healthcare provision (Barasa, 2021).

The medical infrastructure in Kenya is complex and has been developed to meet various health needs. The healthcare system in Kenya consists of a multi-tiered system with six levels spread across four tiers: community health services, primary care, county referral hospitals, and national referral hospitals (Ammoun, 2022). This system enables the implementation of health programs that improve the accessibility, affordability, and availability of NCD services at all levels (MOH, 2021). The community care unit (which may lack physical buildings) emphasizes interventions that do not take place at a specific facility, such as tracking patients, promoting health, and providing education about disease prevention. Basic NCD preventative care is implemented at this level (MOH, 2018).

The primary healthcare service unit includes Level 2 and Level 3 facilities, whose core function are to offer a range of services, including early disease identification, screening, referrals, and other critical healthcare services. Level 4 facilities, typically sub-county hospitals, augment the primary healthcare level in service delivery packages and are the main referral facilities at the county level. These facilities are also expected to offer specialized diagnostic and clinical laboratory services. Level 5 and Level 6 of the healthcare system are considered the higher levels of the system. These include county teaching and secondary referral hospitals and national teaching and referral hospitals at the tertiary level. These facilities provide highly specialized healthcare services and training institutions for medical and paramedical personnel, thus completing the country's healthcare spectrum (Ammoun, 2022).

Kenya's health system can also be divided by service provision in to public sector (48%), not-for-profit private organizations (14%) (including religious, mission, and non-governmental organizations) and private for-profit providers (38%), and the private sector accounting for 52% of health services (Mohamoud & Mash, 2020). The dual public-private framework raises equity concerns because the public sector provides affordable care but frequently lacks resources, particularly in rural areas, whereas private facilities may be financially out of reach for most Kenyans. Not-for-profit organizations help fill gaps in underserved areas, but they may not deliver the specialized care required for successful NCD management. The effectiveness of NCD management in Kenya is determined by the type of provider and regional disparities, emphasizing the importance of improving access, quality, and affordability, particularly in remote areas (Otieno, 2020)

In addressing these difficulties, the Kenyan government implemented several interventions such as the growth of the National Hospital Insurance Fund (NHIF) and the elimination of user fees in primary health care. As per the report from NHIF, by December 2018, 16.7% of Kenya's total population was under its coverage (Moses, 2021). Although the overall health status of the nation has increased since 2006, this is not the case with all 47 counties. To overcome this and maintain progress, policymakers require data on the local trends and disease burden. Continued monitoring of regional health data can help shape policies to uphold advancements, given the country's varied landscape including the rural northern rift, urban centers, coastal areas, Nyanza, and Western Kenya. Considering this complexity, decision-makers in Kenya need a nuanced understanding of the population needs to make informed decisions when implementing public health interventions (Achoki, 2019). It is too soon to determine the impact of the newly introduced Social Health Insurance Fund (SHIF) and Social Health Authority (SHA).

1.1.2 NCDs in Kenya

NCDs are now becoming a health concern in some of the Sub-Saharan countries, including Kenya. NCDs are responsible for 31% of all deaths in Kenya, over 50% of total hospital admissions, and 55% of hospital deaths (Ammoun, 2022). The Ministry of Health (MOH) data presented in 2021 shows that the average length of stay for diabetes is 12.7 days, slightly higher than hypertension at 11.1 days. The number of people with diabetes in Africa was 12.1 million in 2010 and is projected to be 23.9 million by 2030 (MOH, 2021). In Kenya, diabetes affected nearly 1.8 million adults in 2019 and is expected to increase to 2.2 million by 2030 (Karungu, 2024).

The burden of both communicable diseases and NCDs puts a significant strain on the healthcare system and needs to be addressed, as they pose a growing public health challenge (Hall, 2011). Hypertension and diabetes incidence rates increased together, with a high correlation coefficient of 0.996 (Onyango, 2018). This strong incidence correlation suggests that increases in one condition are closely mirrored by increases in the other, most likely due to common environmental or lifestyle factors. Furthermore, the prevalence correlation of 0.45 indicates a moderate association, implying that as hypertension becomes more common, so does diabetes in individuals, this pattern highlights a possible interplay of common causes that contribute to both conditions.

Kenya's Gross Domestic Product (GDP) per capita has experienced growth over the years, reaching approximately US$1,950 in 2023. This reflects a significant increase from earlier years, indicating economic development. The urbanization rate has also steadily increased, rising from 7.6% in 1961 to about 29.5% in 2023. This trend signifies a gradual shift toward more urbanized lifestyles within the nation (Kaki, 2022). Urbanization and GDP growth exhibited a strong correlation with the increase in hypertension or diabetes rates, with correlation coefficients of $r > 0.97$ and $r > 0.60$ after a 1-year lag (Onyango, 2018). This implies that as cities grew, the number of NCDs also increased. The Kenya Demographic Health Survey 2022 revealed that 9% of women and 3% of men aged 15–49 years said that a doctor or other healthcare worker had told them they had high blood pressure. Among these, 32% are on medication for hypertension. Additionally, 1% of both male and female respondents of the same age also had diabetes (KDHS, 2022)

According to a 2023 WHO report, this burden requires a multi-sectoral approach, addressing modifiable behavioural and environmental risks (WHO, 2023). According to the report, the major factors contributing to this trend include unplanned urbanization, the proliferation of unhealthy lifestyles around the world, and an aging population (WHO, 2023). Most of the research on NCD management in Kenya has been descriptive, with few having interventions or randomized clinical trials (Ngaruiya, 2021). Although the Kenyan government has acknowledged this new public health threat, patient experience and views on NCD care have not been well investigated (Toroitich, 2022). Ngaruiya et al. (2021) have documented that the significant access barriers to NCD medicines in Kenya include medicine shortages and high prices. Patients have employed different strategies to cope, such as borrowing money, selling belongings, cutting back on medication, and turning to support from their social networks to obtain required medications (Ngaruiya, 2021).

Long distances to healthcare facilities, cultural beliefs contradicting conventional medical practices, and perceptions of lower-quality care can all prevent individuals from seeking necessary treatment (Sherman, 2018). Furthermore, lack of adequate training for healthcare personnel and ineffective strategies for handling chronic illnesses can lead to substandard healthcare quality, contributing to the increasing prevalence of NCDs in the nation (Kiragu, 2021). Lately, the healthcare system has been greatly strained by various health crises, such as the COVID-19 pandemic. Since the beginning of the pandemic, there has been a significant change in the way healthcare services are funded and delivered to ensure that essential services are maintained (Kiragu, 2021).

Research was carried out in western Kenya, where the Academic Model Providing Access to Healthcare (AMPATH) program effectively integrated NCD care with existing HIV services. By layering services, the program takes advantage of the existing HIV care framework, allowing for the simultaneous delivery of NCD care without the need for new healthcare facilities. This is supplemented by task-shifting, in which trained nurses and healthcare workers manage both HIV and NCD patients, thereby optimizing human resource utilization and increasing accessibility (Osetiskty, 2020). The model's flexibility and scalability enable adjustments based on local needs and health. This approach has shown promise in improving health outcomes while minimizing additional resource demands and could serve as a model for other regions facing similar challenges in integrating care for multiple health conditions."

WHO has developed a global strategy to reduce premature deaths from NCDs by 25% by 2025, emphasizing the critical need for progress considering previous poor results. To meet this goal, the rate of decline in NCD death rates must double between 2015 and 2030. Achieving this goal will necessitate bold political decisions and increased investment in prevention and primary care (Martinez, 2020). Recognizing the growing challenges of NCDs in Kenya, the government has responded by establishing an NCD division within the MOH. In 2015, Kenya initiated an extensive five-year National NCD Strategy to guide actions in decreasing NCD-related fatalities (Subramanian, 2018). Despite some studies addressing the management of NCDs in the region, there are still significant gaps that need to be addressed.

1.1.3 Hypertension and Diabetes in Mombasa County

Hypertension is defined as systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg, or taking antihypertensive medication (Shukri, 2018). Diabetes is defined as chronic high blood sugar levels with disturbances of carbohydrate, fat, and protein metabolism due to defects of insulin secretion, action, or both. Diabetes and hypertension will be the focus of this study as they are common NCDs with a significant impact on public health.

Hypertension and diabetes illnesses are most often present together in the human body, and one cannot be managed without paying much attention to the other (Obonyo, 2019). The low levels of health literacy surrounding these diseases coupled with poor access to quality healthcare services are some of the reasons that contribute to the large management gaps (Berkman, 2011). A cross-sectional survey conducted in Mombasa, Kenya, showed that behavioural risk factors for NCDs were high, including physical inactivity, obesity, and smoking (Tawa, 2011). This susceptibility is, however, exacerbated by socio-demographic factors where the male gender, illiteracy, and low-income earners are the most vulnerable to developing NCDs (Tawa, 2011). The former Mombasa County Director of Health, Dr Shem Patta, estimated that 40% of Mombasa residents are obese and are prone to hypertension and diabetes (Kheir, 2023). These risk factors are likely to rise suggesting the potential future epidemics of chronic diseases.

A study done in Mvita Sub-County, Kenya, demonstrated the existence of a significant gap in the knowledge of hypertension and obesity (Kheir, 2023). 74 out of 110 respondents (67.3%) possessed information regarding such conditions, whereas 42 respondents (38.2%) were completely unaware. The health facilities and healthcare providers were unexpectedly identified as the primary source of health information for 20.3% of the participants, 8.1% said they obtained this information through educational institutions, suggesting that there could be a gap in integrating health education within academic settings. In addition, 90% of the patients receiving treatment have not attained disease control, which demonstrates the extent of the effects of restricted access to information on both disease acquisition and treatment (Kheir, 2023).

1.1.4 Foundational Principles for Assessing Healthcare Services

The Social Determinants of Health (SDH) framework provides a thorough view of the social, economic, environmental, cultural, and political aspects affecting health outcomes and disparities among populations. It recognizes that societal contexts, not just individual behaviors or healthcare access, also influence an individual's health (Chelak, 2023). The SDH framework simplifies health outcomes by concentrating on individual determinants, ignoring the multitude of factors that play a role in health disparities, specifically chronic conditions such as hypertension and diabetes. Moreover, the framework presents social dynamics as unchanging and expected, lacking in representing the fluidity of health and societal changes over time, such as those witnessed during the COVID-19 pandemic. While the SDH framework offers numerous options, it frequently lacks specific guidance on creating effective and sustainable plans. The framework emphasizes describing problems rather than offering practical solutions to effectively decrease health disparities long term (Lawer, 2024).

A key limitation in the SDH framework is the challenge of measuring and quantifying the impact of social determinants, as many social factors are interconnected and influence each other, making it hard to isolate their individual effects. (Kirkbride, 2024). Although researchers have found significant links between variables such as income, employment, education, and mental health results, the exact mechanisms and methods by which these social determinants impact individuals are not completely clear yet. The impact of social determinants on health outcomes throughout a person's life and across different generations is not well understood (Braveman et al., 2011).

The Progress Plus framework incorporates dimensions such as the place of residence, race, occupation, gender, religion, education, socioeconomic status, and social capital. Even though it covers important aspects of socioeconomic and demographic characteristics, the framework has its shortcomings in the context of research. Due to its broad applicability, it can be difficult to implement all the variables highlighted and quantify them in the context of resource-limited research environments (Attwood, 2016).

Article 43 of The Constitution of Kenya, 2010, incorporates the right to the highest attainable standard of health. The implication here is that the government is responsible for delivering not only healthcare services but also essential determinants of health such as shelter, water, and nutrition (COK, 2010). Similarly, Article 12 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR) outlines the state’s duties concerning the right to the highest possible physical and mental health (Tim Exworthy, 2011). This provision highlights the need for a healthcare system to not only encompass medical care but also underlying determinants of health, such as social, economic, and environmental factors. It imposes obligations on the state to take steps to achieve the full realization of this right, including providing access to healthcare services without discrimination. The Kenyan Constitution's Article 43 safeguards the right to health, which aligns with the obligations outlined in Article 12 of the ICESCR, an agreement that Kenya formally adhered to in 1972.

Meanwhile, United Nations General Comment No. 14 (2000), while explaining the right to the highest attainable standard of health (Article 12 of the ICESCR), outlined that the right to health goes beyond the timely and appropriate health care but to the underlying determinants of health (O'keefe, 1998). Therefore, the General Commentary affirms that the right to health comprises the following interconnected and critical elements: Availability, accessibility, acceptability, and quality of healthcare services.

The availability of public health and healthcare facilities, goods, services, and programs ensure they are operational and in adequate supply. Accessibility emphasizes that health facilities, goods, and services should be available to everyone without any form of discrimination. This includes addressing components such as anti-discrimination, physical access, affordability, and the availability of information. Acceptability focuses on ensuring that health facilities, products, and services adhere to medical ethics and are culturally sensitive to the needs of individuals, minorities, groups, and communities. They should also consider gender and life stage requirements, maintain confidentiality, and aim to enhance the health of those they serve. Finally, quality requires that health facilities, goods, and services be scientifically and medically appropriate, as well as of high quality. This includes the provision of skilled medical personnel, scientifically approved drugs and hospital equipment, safe drinking water, and proper sanitation.

These elements take the acronym of AAAQ (Triple A, Q). The AAAQ framework provides a comprehensive approach to examining both supply-side and demand-side factors that influence healthcare service delivery (Exworthy, 2011). It serves as a theoretical foundation to evaluate the availability, accessibility, acceptability, and quality of healthcare services. The framework is practical, conceptual, and an operational tool that can help articulate the complex and sensitive factors related to health service delivery (Homer, 2018). The AAAQ framework can help the community, public health researchers, and policymakers better understand the obstacles to ensuring equitable healthcare provision.

Availability mandates that healthcare facilities, resources, and services be sufficiently present within the country. This encompasses vital elements such as the availability of safe drinking water, adequate hygiene, medical facilities, health centers, trained medical personnel, and drugs. Accessibility stresses the importance of healthcare services being easily accessible to everyone, while acceptability recognizes the varied healthcare requirements of diverse cultures. Consequently, healthcare facilities and services must uphold medical ethics and ensure the acceptability of their services by respecting cultural diversity. The concept of quality requires that healthcare goods and services be scientifically and medically appropriate, including treatment effectiveness and delivery methods, as well as individual treatment.

The AAAQ framework therefore aligns with the principles outlined in Article 12 of ICESCR that elaborates Article 43 of the Constitution of Kenya 2010 by emphasizing the importance of providing, available, accessible, acceptable, and high-quality healthcare services that enable the realization of the right to health for all Kenyans.

Having explored the frameworks and legal mandates that govern healthcare delivery in Kenya, it is important to examine how these frameworks are translated into practical healthcare service delivery (HSD). These frameworks and legal provisions highlight the need for equitable access to healthcare and address the key factors that influence health outcomes. Building on this foundation, we explore HSD, with an emphasis on how it aligns with the AAAQ framework. These elements are essential for improving health outcomes, particularly for individuals affected by NCDs in Kenya.

1.1.5 Healthcare Service Delivery

Many LMICs have formulated ambitious health policies and strategies to enhance health service delivery (HSD) and achieve health-related Millennium Development Goals, yet they often face challenges in aligning implementation with their goals (World Bank, 2010).

HSD, as outlined in the Declaration of Alma-Ata (1978), is described as essential health care that is based on practical, scientifically sound, and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that both the community and country can afford to sustain at every stage of development, fostering self-reliance and self-determination (WHO, 2013).

HSD can be practically defined by emphasizing patients' expectations, the services delivered, and the individuals responsible for providing them. It is described as the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions (Jiratchayaporn, 2020).

The WHO identifies HSD as one of the six essential building blocks of a well-functioning health system, alongside human resources, medical products, health information systems, health financing, and leadership and governance (Osman, 2021). Effective HSD ensures that health services are available, accessible, acceptable, and of high quality, particularly for managing chronic conditions like NCDs. For patients with NCDs such as hypertension and diabetes, the continuity and comprehensiveness of healthcare services are essential for effective disease management and improved QoL (Van Wilder, 2020). However, challenges such as resource constraints, inequities in service distribution, and inefficiencies in healthcare systems often hinder optimal service delivery (Sherman, 2018). Therefore, the integration of HSD improvements within the WHO's health systems strengthening framework is essential for achieving sustainable health outcomes, particularly for vulnerable and disadvantaged populations.

Located on the Kenyan coastline, Mombasa County is a lively and diverse area famous for its abundant cultural history, successful tourism sector, and key role as a significant harbor. The varied ethnic composition of the area has brought about more complexities in the healthcare sector. Over time, Mombasa, the second largest city in Kenya, has witnessed fast economic growth and urbanization, leading to a shift from infectious diseases to NCDs (Kheir, 2023). This alarming trend underscores the urgent need for effective health service delivery systems to address chronic conditions' complexities. Such nuanced cultural perspectives must be understood and valued targeted outreach and educational initiatives that recognize the diversity of religions and ethnicities could enhance the way health services are delivered, especially for marginalized populations (Gearhart, 2013).

1.2 Problem Statement

Despite ongoing efforts by the Kenyan government and global health organizations to combat NCDs such as hypertension and diabetes, the prevalence of these conditions remains alarmingly high in Mombasa County. Hypertension affects 30.7% of the population and diabetes 9% (Tawa, 2011), highlighting a major public health concern. These statistics underscore the urgency of evaluating how healthcare service delivery (HSD) influences the management and outcomes of NCDs. While global and national strategies emphasize the importance of strengthening health systems, there is a limited body of research examining the specific dimensions of service delivery, such as availability, accessibility, acceptability, and quality from the patients' perspective in the Kenyan coastal context.

Current literature tends to focus on epidemiological trends and clinical interventions but lacks in-depth analysis of patient experiences and perceptions regarding healthcare access and service delivery. Specifically, there is insufficient evidence on how patients with hypertension and diabetes perceive healthcare services, and how these perceptions impact treatment adherence and quality of life. This is a critical gap, as patients' engagement with healthcare systems is strongly influenced by their perceived experience of care. Moreover, much of the existing literature has not adequately applied comprehensive frameworks, such as the AAAQ (Availability, Accessibility, Acceptability, and Quality), to assess the structural and relational aspects of service delivery in the management of chronic diseases.

The Coast General Teaching and Referral Hospital (CGTRH) is the only Level 5 county hospital in Mombasa, with a 700-bed capacity. Under a hub-and-spoke model, CGTRH serves as the regional referral centre for the entire coastal region and beyond, with a primary catchment population of 1.3 million and a secondary catchment population exceeding 3 million. The hospital provides a wide range of services, including routine, specialized, and sub-specialized care, encompassing both curative and rehabilitative treatments. CGTRH is supported by six Outreach Centres (Chaani, Vikwatani, Marimani, Mtongwe, Shika Adabu, and Utange). These centres function as feeder and screening facilities, focusing on the early detection of communicable and NCDs, which are then referred to the main hub for specialized care. This study will focus on CGTRH as the primary facility, examining its healthcare service delivery and the perceptions of patients with hypertension and diabetes within the context of NCD management (Mombasa County, 2018).

The healthcare system in Mombasa County faces known systemic barriers, including under-resourced primary healthcare facilities, inconsistent supply chains for medications and diagnostics, and a lack of integrated mental health services (Mombasa County Health Systems, 2023). Coordination between community health units and formal healthcare structures remains limited, further exacerbating service fragmentation. While these system-level issues are documented, there is a lack of patient-centered studies that explore how such deficiencies are perceived and navigated by patients with chronic illnesses.

Another key gap lies in the limited exploration of how healthcare provider attitudes, cultural sensitivity, and trust affect the acceptability of services. Understanding these relational dynamics is essential, especially in culturally diverse and resource-constrained settings like Mombasa. While some studies have explored health system performance in urban settings, few have investigated how perceptions shape healthcare-seeking behaviour and long-term management of hypertension and diabetes, particularly using validated tools like the WHOQOL-BREF.

This study was designed to fill these knowledge gaps by applying the AAAQ framework and the WHOQOL-BREF tool to assess patient perceptions of service delivery and its impact on quality of life. Focusing on Coast General Teaching and Referral Hospital, a Level 5 facility and regional referral center, this research offers unique insights into patients' real-world challenges at higher-tier public healthcare institutions. It further contributes to the literature by examining how cultural, systemic, and relational dimensions of healthcare delivery intersect with patient engagement and outcomes in NCD management.

1.3 Research Objectives

1. To evaluate the perceptions of patients with hypertension and diabetes regarding healthcare service delivery in Mombasa County and to determine how these perceptions impact the management of their conditions and quality of life.
2. To evaluate perceptions among patients with hypertension and diabetes about available healthcare services and how relevant these resources are to their care.
3. To assess the perceived accessibility of healthcare services and to determine the importance of accessibility to care for patients with hypertension and.
4. To measure the perception of acceptability of healthcare services among hypertensive and diabetic patients and to evaluate the importance of these factors in their care.
5. To assess the perception of patients with hypertension and diabetes on the quality of healthcare services and how relevant these resources are to their care.

1.4 Research Questions

1. How do patients with hypertension and diabetes in Mombasa perceive healthcare service delivery, and how do these perceptions impact condition management and quality of life?
2. What are patients' perceptions of the availability, and how relevant is it to their care?

3. How do patients with hypertension and diabetes perceive the accessibility of healthcare services, and how important is this to their care?

4. How do patients perceive the acceptability of healthcare services and how important is this to their care?

5. What factors influence patients' perceptions of the quality of healthcare services in Mombasa, and how do these perceptions affect treatment outcomes?

1.5 Scope of the Study

The study focused on Mombasa County, Kenya, a region characterized by diverse geographic and socio-economic conditions that impact healthcare delivery. It spanned urban, suburban, and rural areas, aiming to capture a representative understanding of the population's healthcare experiences.

The study faces several limitations that could affect the validity and generalizability of the findings. Firstly, the reliance on self-reported data means that participants' perceptions of HSD and QoL may be subjective and influenced by their health literacy, socioeconomic status, cultural beliefs, and prior healthcare experiences. These factors could lead to overestimation or underestimation of their health status and treatment adherence. Additionally, recall bias may arise, particularly when participants are asked to remember past healthcare interactions, potentially leading to inaccuracies in the data collected. The study's focus on Mombasa County also limits the generalizability of the findings to other regions in Kenya, as the socio-cultural and economic context may differ. Moreover, a small or homogeneous sample may not fully capture the diverse experiences of individuals with hypertension and diabetes across different demographic groups, further limiting the scope of the study's conclusions.

The study is delimited to the experiences and perceptions of patients with hypertension and diabetes in Mombasa County. It specifically focuses on individuals receiving care in public healthcare settings and does not include private healthcare providers or patients in other regions of Kenya. The research will not conduct sub-analyses based on demographic parameters such as age, gender, or socioeconomic status, narrowing the focus to overall trends in HSD and QoL. This decision to exclude detailed subgroup analyses is intended to simplify the study's scope, although it may overlook important variations in experiences and outcomes among different groups within the population.

1.7 Significance

This study is vital for informing healthcare policy development and resource allocation in Mombasa County and beyond. By evaluating perceptions of HSD using the AAAQ framework, the findings can guide policymakers in addressing gaps in availability, accessibility, acceptability, and quality of care. These insights can be incorporated into national health strategies, such as the Kenya Universal Health Coverage framework, to prioritize investments in NCD management. The study's emphasis on patient perspectives and QoL will provide a strong basis for designing policies that are not only evidence-based but also patient-centred, ensuring that the healthcare system meets the needs of diverse populations.

The study will contribute directly to improving clinical and public health practices by identifying specific barriers and facilitators in managing hypertension and diabetes. Insights into patient perceptions can guide healthcare providers in tailoring interventions to improve patient satisfaction and adherence to treatment plans. For instance, understanding issues around cultural acceptability and trust can lead to the development of culturally competent training programs for healthcare staff. Additionally, this research highlights the need for infrastructural improvements, such as decentralizing services or integrating mobile health technologies, to enhance healthcare access and equity.

On a theoretical level, this research contributes to the broader understanding of HSD and its impact on health outcomes through the application of the AAAQ framework. By integrating this framework with QoL assessment tools like the WHOQOL-BREF, the study provides a novel approach to exploring how service delivery factors influence patient outcomes. The findings will enrich theoretical discussions around health systems research, particularly in LMICs, and provide a foundation for future studies examining how perceptions of HSD influence the management of chronic conditions and contribute to improved QoL outcomes.

CHAPTER 2

2.1 Introduction

This chapter provides a comprehensive review of the theoretical and empirical literature relevant to the study of Health Service Delivery (HSD) and Quality of Life (QoL) among patients with non-communicable diseases (NCDs) in Mombasa County. This chapter is divided into several sections, including a theoretical review, and an empirical review. By synthesizing existing literature, this chapter aims to establish a solid foundation for understanding the complexities of HSD and its impact on QoL which influence patient outcomes.

An individual's readiness to seek and adhere to recommended care may be significantly impacted by their perceptions of the severity of the illness, the efficacy of the treatment, and the availability of care (Lee, 2019). Beliefs and behaviors can significantly influence an individual’s interactions with disease management and healthcare services (Muturi, 2005). This literature review outlines existing research on how individuals perceive HSD. Using the AAAQ framework and the WHOQOL-BREF tool, this analysis examines these perceptions and draws on relevant theories to understand how healthcare delivery is viewed in this context. The AAAQ framework offers a comprehensive lens to assess how each element influences an individual’s decision to seek treatment. Understanding how each of these factors plays a role in treatment-seeking behaviour is crucial for improving health outcomes. This analysis also investigates how these perceptions impact the QoL of individuals living with hypertension and diabetes. It is particularly important for understanding healthcare experiences in Mombasa County, which is currently facing a high burden of NCDs.

2.2 Underpinning Theoretical Framework

2.2.1 Systems Theory in Healthcare Delivery

Systems theory is an interdisciplinary framework that originated in biology and was developed in the 1950s by Austrian biologist Karl Ludwig von Bertalanffy to provide a structured way to understand complex systems across various fields (Anderson, 2016). It emphasizes the interrelatedness of components within a system, advocating that the whole cannot be understood solely by analysing individual parts in isolation. This holistic perspective has gained relevance across disciplines, including healthcare, providing a valuable framework for understanding complex interactions and improving outcomes.

Health systems are complex, multi-tiered structures that significantly impact the health and well-being of individuals worldwide. Recognizing that healthcare services directly affect health outcomes and care delivery is essential. However, wider societal influences and the complex interconnections within the system also play an important role (Raman, 2021). To understand and enhance healthcare systems, the WHO proposed a strategy known as the six building blocks framework. This framework identifies six critical components necessary for a productive health system: service provision, healthcare workforce, health data systems, accessibility of essential medications, sustainable financing, and leadership/management (Sacks, 2019).

Service delivery is at the core of the healthcare system, involving the organizing and provision of healthcare services. This is closely connected to the healthcare workforce, which must be equipped with the required skills, distribution, and motivation to provide care efficiently (Raman, 2021). The health information system enables the smart utilization of data for decision-making and addressing new needs (Witter et al., 2022). Equally important is guaranteeing the availability of necessary medications, which involves coordinated actions in purchasing, supply chain oversight, and appropriate usage. Ensuring a sustainable healthcare financing system is crucial for fairly gathering and distributing resources to address the healthcare needs of the population. Consequently, effective leadership and governance ensure the consistency and responsibility of the entire system (Nsubuga, 2010). These elements are interdependent and dynamic. They constantly change to adapt to new demands (Olmen, 2012).

In healthcare settings, Systems Theory encourages a shift away from linear cause-and-effect thinking to a broader examination of how organizational, environmental, and individual factors interact to influence outcomes (Anderson, 2016). Its application recognizes that adverse events or inefficiencies often arise from systemic weaknesses rather than solely individual failings, offering opportunities for interventions that address root causes rather than symptoms. It has emerged as a pivotal framework for understanding and enhancing the intricate interactions within healthcare organizations and among various stakeholders (Holland, 2012).

The importance of Systems Theory in healthcare lies in its ability to enhance quality and safety by fostering systemic insights. For instance, a poorly coordinated workflow may inadvertently lead to errors, such as nurses being assigned tasks for which they are not adequately trained. Systems Theory encourages organizations to move beyond penalizing individuals to instead identify and rectify the underlying structural issues that enabled such scenarios (Anderson, 2016). By embracing this theory, healthcare systems can design smarter, more resilient frameworks that account for the complexities inherent in-patient care. This approach not only promotes accountability at the individual level but also cultivates a culture of continuous improvement through systemic evaluation and adaptation.

A key aspect of this theory is recognizing healthcare as a complex, interconnected system composed of many entities that must be efficiently controlled to achieve optimal outcomes (Mutingi, 2014). This approach emphasizes the significance of considering both the technical and operational elements of the system and the social, cultural, and personal factors influencing the interactions and behaviors of providers and patients (Gillespie, 2009). A systems approach to public health emphasizes the importance of considering broader community needs, including health insurance and preventive measures. This holistic perspective is vital for effectively addressing health infrastructure challenges and mitigating the risks (Holland, 2012).

Central to the systems theory is the idea that healthcare is not a simple linear process but rather a complex system with many interdependent components (Khayal, 2021). An important shift in this model is recognizing the patient as an active participant in healthcare. Patients are no longer just recipients of care but integral to the healthcare system, with their behaviors, perspectives, and circumstances significantly influencing outcomes (Waweru et al., 2020).

Systems theory provides a comprehensive framework for identifying the various components and relationships that influence the effectiveness and sustainability of healthcare systems (Weiser, 2013). Systems theory facilitates a deeper understanding of health problems by encouraging healthcare professionals to identify and analyze the various environmental influences surrounding patients. This analysis allows for insights into recurrent health issues and informs the development of public health initiatives that consider social, demographic, and economic factors affecting health delivery (Gillespie, 2009).

Mutingi (2014) focused on analyzing sustainability in healthcare systems, highlighting the significance of adopting a systems-thinking approach. This approach highlights the interconnectedness of various parties and recognizes the importance of incorporating their viewpoints. Understanding the satisfaction levels of patients, providers, and healthcare organizations, who are essential participants in the system, can improve the healthcare system's functioning (Mutingi, 2014). Recognizing patient choice is vital and required to provide a holistic and unified approach to providing healthcare services. Overall, the application of systems theory in healthcare underscores its significance in fostering a more integrated and effective approach to health management and delivery, ultimately leading to improved health outcomes.

Systems Theory, which emphasizes the interconnections and interdependencies within a system, aligns well with this study by offering a holistic lens to evaluate healthcare service delivery. The theory underpins the examination of healthcare services as part of a complex network of resources, policies, human interactions, and systemic processes that influence outcomes. By focusing on the interconnectedness of components such as healthcare staff, medication availability, infrastructure, and patient-provider relationships, Systems Theory allows the study to assess how these elements collectively affect the management of NCDs.

The AAAQ framework, utilized in this study, complements Systems Theory by breaking down HSD into actionable dimensions. Systems Theory's focus on dynamics and interrelations provides an overarching perspective for understanding how the AAAQ components interact. For example, Systems Theory helps explain how the availability of trained healthcare workers might influence accessibility or how cultural acceptability can shape perceived quality.

This theoretical lens is integrated into the sections of the study that explore HSD dynamics, organizational workflows, and patient-provider interactions. It plays a crucial role in analysing the four dimensions of the AAAQ framework. For availability, it highlights systemic inefficiencies and resource allocation gaps that impact healthcare access. Regarding accessibility, it examines barriers such as inadequate infrastructure and systemic bottlenecks that hinder care delivery. In the context of acceptability, Systems Theory explores how cultural sensitivities and systemic biases shape patient perceptions of healthcare services. For quality, it identifies interdependencies within the healthcare system that may lead to inefficiencies, errors, or suboptimal outcomes, thereby providing a holistic view of service delivery.

However, while Systems Theory effectively addresses organizational and systemic aspects, it does not sufficiently account for the behavioural or psychological dimensions of patient experiences and decision-making. To bridge this gap, supplementary theories such as the Health Belief Model (HBM), and the Theory of Planned Behaviour (TPB) are essential. HBM explores how perceptions of susceptibility, severity, and treatment efficacy influence patients' willingness to seek care (Green, 2020). TPB examines how attitudes, social norms, and perceived control affect healthcare-seeking behaviours (Bosnjak, 2020). Together, these frameworks complement Systems Theory, offering a comprehensive perspective on healthcare service delivery and its impact on patient outcomes.

2.2.2 The Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB), developed by Ajzen (1991), is a widely used psychological framework that seeks to explain human behaviour through three key dimensions: behavioural beliefs, normative beliefs, and control beliefs (Bosnjak, 2020). These beliefs collectively shape individuals' attitudes, perceived social pressures, and perceived behavioural control, which influence their intention to engage in specific behaviours.

Behavioural beliefs, which shape attitudes toward healthcare, refer to patients' perceptions of the benefits of regular healthcare visits, medication adherence, and preventive measures (Conner, 2005). For instance, if patients believe that adhering to treatments will prevent complications, it positively influences their attitude toward healthcare. Normative beliefs, influenced by social pressures from family, peers, or healthcare providers, also impact healthcare behaviours (Conner, 2005). In settings like Mombasa County, family support plays a critical role in encouraging lifestyle changes for diabetes management (Sherman,2018) Lastly, control beliefs, relating to patients' perceptions of the ease or difficulty of engaging in health behaviours, are significantly influenced by accessibility, affordability, and availability of resources (Conner, 2005). For example, financial constraints or long distances to healthcare facilities may hinder treatment adherence.

Several studies have demonstrated the utility of TPB in understanding health behaviors. For example, McEachan et al. (2011) conducted a meta-analysis of TPB applications across various health behaviors, including alcohol use, smoking, and physical activity, highlighting that perceived behavioural control was the strongest predictor of intention, followed by attitude and subjective norm (McEachan, 2011). These findings underline the importance of perceived control in health behaviors, which is particularly relevant for chronic disease management, where patients must engage in ongoing behaviors like medication adherence and lifestyle changes.

In the context of this study, which examines perceptions of healthcare service delivery (HSD) and their impact on quality of life (QoL) outcomes for patients with NCDs, the TPB offers a valuable framework for understanding how patients' beliefs influence their healthcare decisions. By incorporating TPB, the study explores how attitudes toward treatment, perceived social expectations, and an individual’s sense of control shape engagement with healthcare services.

These insights are crucial for identifying behavioral drivers that either facilitate or hinder effective NCD management, thereby informing strategies to improve both service delivery and patient well-being in Mombasa County. TPB complements models like the Health Belief Model by highlighting the influence of social norms and perceived control, factors that are especially relevant in chronic disease care, where sustained behavioral change is required.

By linking psychological drivers of behavior to broader patterns in care-seeking and treatment adherence, TPB enables a deeper understanding of how these elements affect QoL for individuals with hypertension and diabetes. This theoretical lens helps contextualize variations in patient engagement, providing a basis for assessing how systemic, cultural, and personal factors collectively shape health outcomes.

2.2.2 Perception in Healthcare Delivery

Patients' perceptions of healthcare services play a critical role in improving service delivery and ensuring that care effectively addresses their needs. Providing healthcare is a complicated process impacted by various factors that influence patients' outcomes and experiences. The way an individual views the care they receive plays a vital role in their health and wellness (Khayal, 2021).

A study on perceptions of healthcare revealed that successful communication among providers, patients, and their families was central to the patient experience. Patients valued healthcare providers who demonstrated strong motivation, professionalism, and commitment, which were key determinants of satisfaction (Hannawa, 2020). These findings highlight that communication, responsiveness, and emotional involvement are among the most significant aspects of perceived healthcare quality.

Key aspects influencing patient-perceived quality in healthcare include the experience and competence of healthcare personnel, as patients highly value staff knowledge, skills, and dedication. Efficient administrative processes are also critical, as improved access to services reduces inconvenience, whereas delays can cause dissatisfaction. Additionally, the presence of safety measures is fundamental, with patients expecting hospitals to prioritize their safety as a core component of care. (Duggirala, 2023).

Davis-Michaud (2004) conducted a systematic review of 23 studies across Canada, the USA, Australia, the Netherlands, and the U.K. to explore aspects of HIV care valued by patients. The findings highlighted that interpersonal factors such as approachability and compassion significantly enhance patient satisfaction. Additionally, continuity of care, effective coordination of services, and the opportunity for patients to participate in decision-making were identified as crucial for fostering a sense of value during treatment (Davis-Michaud, 2004).

At a hospital in Bengaluru, India, patients reported higher satisfaction levels when treatments led to positive health outcomes and symptom relief, emphasizing that the perceived effectiveness of medical care is a key factor in shaping their overall experience. This highlights the importance of clinical effectiveness as a vital component of patient-centred care (Ahmad, 2020).

The factors influencing patients’ perceptions of healthcare services, such as communication, competence of providers, and patient-centred care, highlight the significance of individuals' beliefs and attitudes toward their health and the care they receive (Hannawa, 2020; Duggirala, 2023; Davis-Michaud, 2004; Ahmad, 2020). These perceptions directly impact patients' engagement with healthcare services and their adherence to treatment plans, particularly for chronic conditions like NCDs. To better understand how these perceptions influence health behaviors, the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB) provide a valuable framework.

2.1.3 The Health Belief Model

The Health Belief Model (HBM) is a well-established psychological framework developed to explain and predict health-related behaviors by focusing on individuals’ beliefs and attitudes toward illness and health actions. It comprises several key constructs: perceived susceptibility, which reflects an individual’s belief about their vulnerability to a health condition; perceived severity, which relates to the seriousness of the condition and its potential consequences; perceived benefits, or the advantages believed to result from engaging in health-promoting behavior; perceived barriers, which include physical, psychological, financial, or cultural obstacles to action; self-efficacy, representing confidence in one’s ability to perform a behavior; and cues to action, which are triggers such as health campaigns or social influences that prompt health behavior (Wong, 2020; Green, 2020).

In this study focusing on patients with non-communicable diseases (NCDs) in Mombasa County, the HBM provides a lens to understand how these beliefs shape healthcare behaviors and quality of life (QoL) outcomes. Specifically, perceived susceptibility and severity guide patients' recognition of the risks posed by hypertension and diabetes, influencing the importance they place on accessing healthcare services that are available, accessible, acceptable, and of quality (AAAQ framework). Perceived benefits highlight how patients value these healthcare services in managing their conditions, while perceived barriers identify the challenges they face, such as financial constraints, cultural differences, or geographic limitations, which hinder care-seeking and adherence (Green, 2020).

Cues to action and self-efficacy further explain what motivates patients to engage with healthcare providers and persist in treatment. For instance, provider recommendations or health education serve as cues that encourage care, while confidence in managing one's illness supports ongoing adherence to treatment plans (Wong, 2020).

By aligning the HBM constructs with the AAAQ framework, this study captures a comprehensive picture of how patients' perceptions influence their interactions with the health system and their health outcomes. While the HBM sheds light on individual cognitive and motivational factors, it does not fully address the influence of external social pressures or perceived control over behavior. This limitation is addressed by integrating the Theory of Planned Behavior (TPB), which expands understanding by including attitudes, subjective norms, and perceived behavioral control, thus providing a richer explanation of patients' healthcare engagement and adherence.

Table 2.1 Theoretical Mapping of TPB and AAAQ Constructs to Study Variables

Theory/Framework	Core Constructs	Linked Study Variables	Relevance to Objectives
Systems Theory	Interactions among system components, feedback loops, and system dynamics.	Health system organization, resource flows, service coordination	Provides a framework for understanding structural factors influencing healthcare delivery.

Theory of Planned Behavior (TPB)	Attitudes, Subjective Norms, Perceived behavioral Control	Perceived service value, social support, adherence behavior	Explains health-seeking and adherence behaviors
Health Belief Model (HBM)	Perceived susceptibility, severity, benefits, barriers, self-efficacy, cues to action	Patient perceptions, treatment adherence, barriers to care	Explains individual beliefs affecting healthcare engagement and adherence
AAAQ Framework	Availability, Accessibility, Acceptability, Quality	Healthcare service delivery dimensions	Guides the evaluation of system-level service characteristics
WHOQOL-BREF	Physical, Psychological, Social, Environmental QoL	Quality of Life (dependent variable)	Measures patient-centered outcomes related to service use

2.1.3 Quality of Life in Disease Management

The terms health, quality of life (QoL), and health-related quality of life (HRQoL) are frequently used interchangeably. WHO defines health as complete physical, mental, and social well-being rather than simply the absence of illness (Cheung, 2020). Some view health as an "optimal function" in comparison to societal standards rather than considering social aspects (Larson, 2022). QoL is difficult to define and encompasses concepts such as subjective well-being and life satisfaction. Definitions range from personal satisfaction to overall well-being in the physical, social, and emotional domains (Amin, 2022). HRQoL refers to how individuals perceive their physical, mental, and social well-being to their health. It includes aspects of quality of life that are affected by health conditions and how people value their current health status (e.g., using Quality-Adjusted Life Years). HRQoL often intersects with both health and overall quality of life (QoL), but it is not always clearly differentiated. It tends to reflect more on health outcomes rather than the broader concept of QoL, or it may combine both aspects to highlight how health impacts a person’s quality of life (Karimi, 2016).

QoL assessments are being utilized more extensively in clinical research to evaluate improvements in perceived well-being, and an increasing number of generic and disease-specific 'quality of life' measurement tools are becoming available (Kwan, 2019). QoL is a central consideration in evaluative research and a key objective of healthcare policies, playing a vital role in disease outcomes. Improved QoL is associated with better HRQoL, which can shape treatment decisions and enhance patient satisfaction (Sarkar, 2023). Knowledge of the complex relationship between HRQoL and comorbidities can guide policymakers and healthcare providers in prioritizing screening, prevention, and disease treatment (Van Wilder, 2020). Studies have indicated that people with NCDs often have lower HRQoL because of the restrictions caused by their conditions on their physical, emotional, and social well-being (Witts, 2024; Amin, 2022; Mishra, 2022). Factors including socioeconomic status, disease severity, and having multiple chronic conditions can worsen these difficulties even more (Witts, 2024). While HRQoL in chronic disease management is gaining more attention, there is still a lack of thorough research on the factors influencing the self-reported health status of NCD patients (Van Wilder, 2020).

NCDs impose a significant disease burden on patients, carers, and society (Kazibwe, 2021). Within the past decades, the interest in chronically ill patients' HRQoL as a key health outcome indicator has increased due to the lack of an adequate cure for several NCDs, resulting in a shift from problem-oriented to goal-oriented care. (Van Wilder, 2020). Research shows that patients with NCDs experience a notable decline in HRQoL as it serves as a key predictor of morbidity and mortality (Amin, 2022). Developing healthcare strategies and interventions that aim to enhance patient outcomes requires a critical understanding of the relationship between NCDs and HRQoL.

Research carried out in Ghanaian healthcare settings shows that people with lower HRQoL scores are at a higher risk of experiencing negative health effects, underscoring a connection between declining HRQoL and adverse health results. Various factors were found to affect HRQoL, including the specific type of NCD, comorbidity, marital status, and education level. Additionally, a considerable number of participants faced challenges with anxiety/depression and pain/discomfort, impacting their overall wellness and control of their condition (Witts, 2024). These results emphasize the importance of considering HRQoL in clinical settings, as improving HRQoL may result in better disease outcomes and an enhanced QoL for individuals with NCDs.

Similarly, a study conducted at the outpatient department of the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders revealed that type 2 diabetes has a profound negative impact on the overall QoL significantly affecting both physical and mental well-being (Amin, 2022). Furthermore, the study highlighted the emotional and mental toll of managing a chronic condition, such as elevated levels of stress, anxiety, and feelings of social isolation, all of which contribute to a drop in mental health scores. Research has widely recognized that diabetes-related complications have a major impact on QoL, indicating that better management of diabetes may enhance QoL (Mishra, 2022).

A study was conducted in Thailand with individuals from 15 various healthcare facilities to evaluate QoL of patients with depression in the Thai healthcare system. The findings revealed that more than 75% of patients were only given antidepressant drugs indicating that the treatment method mainly involved administrating medications. Concerns about the quality of care resulted from a lack of treatment plans that include therapy and group support, which are important for addressing all aspects of depression. The research indicates a potential issue with the mental health system, proposing that depending only on medication might not suffice to improve patients' overall health (Jiratchayaporn, 2020). This suggests that individuals suffering from depression can improve their overall well-being by implementing a combined treatment approach that includes both medication and psychological support.

The WHOQOL-BREF, a condensed version of the WHOQOL assessment tool, was developed in the late 1990s and is used in healthcare to inform policy decisions, improve patient care, and tailor interventions based on patients' subjective experiences and needs. The instrument contains 26 items and was developed with 15 international field centres to obtain an assessment tool that is applicable across cultures. The WHOQOL-BREF is used in clinical studies to assess enhancements in perceived QoL. This instrument covers four main areas: Physical Health, Psychological, Social Relationships, and Environment, providing a comprehensive view of QoL. The tool’s development involved qualitative research to ensure the relevance and applicability of its items, making it a valid instrument for comparing QoL perceptions globally. The findings from its use support the concept validity of the WHOQOL in understanding cultural differences and similarities in QoL assessments (Saxena, 2001). The WHOQOL-BREF is now recognized as a useful instrument in multinational studies, allowing for evaluations of QoL in various environments (WHO, 2012).

The WHOQOL evaluations are essential in health policy research to assess the effectiveness of health interventions and services. By including assessments of individuals' well-being in regular health evaluations, policymakers can improve their understanding of how healthcare systems affect QoL, which can help them make better decisions about allocating resources and developing programs (WHO, 2012). When using a "QoL" assessment tool in different cultural contexts, Individuals are likely to place varying values on various aspects of their lives, however, knowing ways of determining the significance of these differences and whether a reasonably valid instrument can be generated despite them is important (Mishra, 2022).

The WHOQOL-BREF study that was conducted across 15 centers in 14 countries, which included both developed and developing nations, highlighted the following findings: Gender differences emerged as a critical factor in the study. Women tended to rate most QoL items as more important than men, indicating a potential gender-specific response pattern. This raises questions about whether these differences reflect actual variations in the perceived importance of life aspects or are influenced by differences in reporting behaviour. Additionally, age-related differences were observed, with younger adults assigning greater importance to psychological and social/work-related items, while older adults prioritized aspects related to the environment, social support, and health care, aligning with their specific life concerns (Saxena, 2001). The study highlights the necessity of understanding the influence of social, economic, geographic, and cultural factors on the importance ratings of QoL items. It’s important to note that while certain aspects of life may hold universal significance, the degree of importance can vary considerably across different cultural contexts.

A study conducted by Amin (2022), delves into the QoL of individuals living with type-2 diabetes in Bangladesh and reveals that the WHOQOL-BREF is a reliable instrument, that allows for a comprehensive assessment of different aspects of QoL, indicating the range of impacts of diabetes on individuals (Amin, 2022). These results emphasize the significance of incorporating QoL evaluations into service delivery to improve patient results and guide treatment plans.

Both QoL and HRQoL are vital constructs in understanding and managing non-communicable diseases (NCDs). As we progress through this paper, we will maintain a consistent focus on QoL, aiming for clarity and coherence when exploring patient experiences. This approach eliminates the need to switch between HRQoL and QoL, resulting in a more straightforward discussion of the factors influencing health outcomes. These dimensions highlight the multifaceted nature of health, encompassing not only physical but also emotional, social, and psychological well-being.

Healthcare providers can gain deeper insights into the diverse impacts of chronic diseases on patients' lives through instruments like the WHOQOL-BREF, which guide tailored interventions and improve overall care. The AAAQ framework, which focuses on the availability, accessibility, acceptability, and quality of healthcare services, is a useful tool for guiding healthcare delivery, ensuring that it is not only effective but also responsive to patients' diverse needs. This integration allows for a patient-centred approach that not only improves the quality of healthcare services but also ensures that treatment is aligned with patients' lived experiences. Ultimately, the intersection of the two enhances the management of NCDs by making care more responsive to the realities of patients' lives, leading to better health outcomes and overall patient well-being.

Having explored the concept of QoL in the context of disease management, particularly surrounding chronic conditions like hypertension and diabetes, it is important to examine how HSD influences QoL outcomes. To understand this better, the AAAQ (Availability, Accessibility, Acceptability, and Quality) framework offers a comprehensive lens for evaluating healthcare services. By addressing the essential dimensions of health service provision, ensuring services are available, accessible, acceptable, and of high quality—this framework can provide valuable insights into the factors that affect both the effectiveness of healthcare delivery and the overall well-being of patients.

2.2 Empirical Review

The AAAQ Framework in Health Services

2.2.1 Availability of Healthcare Resources

This section evaluates the primary factors, such as infrastructure and workforce, that impact the availability of NCD services. Analyzing these variables shows that a more thorough and context-specific approach is necessary to address the changing needs and demands of the population.

2.2.1.1 Infrastructure

Ammoun, (2022) conducted a study in Kenya to assess the readiness of health facilities in various locations and settings to provide essential services for NCDs. When examining the overall preparedness of health facilities, the findings revealed an acceptable degree of readiness. However, critical gaps were identified, particularly in terms of the availability of trained personnel and the presence of national guidelines for managing these conditions. This lack of trained staff and standardized protocols indicates that, despite the availability of services, the level of care provided may be inadequate. Such deficiencies can impede effective disease management, ultimately affecting patient outcomes (Ammoun, 2022). Furthermore, the study found significant variations in readiness across regions and urban/rural settings. This disparity suggests that some areas may be better prepared to deal with NCDs than others, emphasizing the need for targeted interventions to address these disparities. The findings highlight the importance of increasing service availability and improving health facilities' overall capacity to provide high-quality care in various settings.

The above study used a sampling method that may have introduced sampling bias despite efforts to ensure robustness. The selection of facilities was not exhaustive, and the findings may not accurately reflect the readiness of all health facilities across the country. This limitation is particularly relevant in Kenya's diverse healthcare landscape, where resource availability and service delivery may differ beyond the sampled facilities. The study incorporated self-reported data from facility staff concerning the availability of services and resources. This reliance on self-reported data raises concerns about potential bias, as respondents may have overestimated their facilities' capabilities. Such biases may result in an underestimation of gaps in service readiness or, conversely, the amplification of deficiencies. Finally, while the study identified regional and urban-rural disparities in service readiness, it did not investigate the underlying causes of these differences. Understanding the socioeconomic, cultural, and infrastructural factors that influence health facility readiness would provide a more nuanced understanding of the challenges associated with managing NCDs in various contexts.

2.2.1.2 Workforce

A study was conducted in 36 LMICs as part of the State of the World's Midwifery Report 2014. This research assessed the adequacy of sexual, reproductive, maternal, newborn, and adolescent health workers to evaluate availability within the AAAQ framework. According to Caroline (2018), the availability focused on strategic intelligence on the health workforce, policy environments, education and training, financing supply, and partnerships. The study highlighted challenges such as insufficient workforce size, delays in deployment after training, and migration to the private sector, impacting the public sector's capacity to provide sexual, reproductive, maternal, newborn, and adolescent health services (Caroline, 2018). The study's findings provide a valuable assessment, but the concern is that this evaluation may inaccurately capture the complex challenges faced in these regions. While important, the focus on strategic intelligence, policy environments, education, and partnerships may overlook contextual factors such as political instability, economic constraints, and cultural beliefs that significantly impact healthcare accessibility and service delivery. These suggested approaches, such as human resource planning, simplified hiring procedures, and rural service incentives, may not work well or be suitable in every situation. A more detailed and inclusive strategy is required to meet the varied and changing needs of marginalized communities, considering the wider social, economic, and political factors affecting healthcare availability.

An examination of breast cancer treatment services in Mombasa was conducted, assessing factors such as drug availability, access to radiotherapy, and staffing levels. From the focus group discussions, the lack of specialist services meant that some patients were treated by general practitioners, which compromised the quality of care. The shortage of skilled workforce, including cancer specialists, potentially led to misdiagnosis, which in turn resulted in more costs and poor health outcomes. Those diagnosed faced worsening illness as they waited in queues for months (Sherman, 2018). A potential limitation is that the small sample size for qualitative components may limit the depth of understanding of the broader population's experiences. Focus group discussions and in-depth interviews may introduce biases based on participants' willingness to share their experiences openly. The assertion that treatment by general practitioners due to a lack of specialists "compromised" care, while potentially true in some cases, needs further investigation. The study highlights the shortage of skilled staffing and its potential impact on misdiagnosis, but it does not quantify the frequency of misdiagnosis or provide direct evidence linking it to the observed delays in treatment.

2.2.2 Accessibility of Healthcare Resources

Accessibility in this context is the ability of individuals to obtain healthcare services for NCD prevention, diagnosis, and treatment without facing barriers. This involves physical, financial, non-discrimination, and information access to healthcare services (Exworthy, 2011).

2.2.2.1 Physical Accessibility

Accessibility of breast cancer treatment services in Mombasa County was evaluated, with a specific focus on travel distances highlighting the geographical barriers faced by patients seeking breast cancer treatment services. The researchers found that the distance patients had to travel to reach treatment centers presented a significant barrier, with many unable to afford the necessary transportation costs or the time required to travel long distances to receive care (Sherman, 2018). This highlights the need for strategies to decentralize cancer treatment services and bring them closer to the communities that need them, reducing travel burdens and improving overall accessibility. Gaining detailed knowledge of the different transportation options, their prices, and how often they need services offers a more detailed perspective on the influence of travel on patient accessibility. Studying patients' socio-economic status and its connection to their transportation affordability can offer a better understanding of how economic factors intersect with access to healthcare.

NCD medication during the COVID-19 pandemic in Kenya highlighted significant disparities in healthcare responsiveness among counties. While some counties used mHealth technologies and had established systems to reach patients, others had no system in place at all. The study found that among the 13 counties assessed, five used mHealth technologies, while a similar number lacked an established system to reach patients (Kiragu, 2021). mHealth Kenya uses mobile technology to improve healthcare through tools like *Mobile Lab* for results, *Ushauri* for patient management, and *Care for the Carer* for supporting healthcare workers (mHealth Kenya, n.d.). This suggests variations in accessibility to NCD medication across different counties. The study emphasizes the pressing need for a more coordinated and equitable approach to healthcare delivery, ensuring that all Kenyan citizens can obtain essential NCD medicines regardless of their county of residence. However, the study assesses only 13 counties, which may not accurately represent the entire country. Although the study acknowledges discrepancies, the situation would improve with a more in-depth examination of the root causes behind these variations. For instance, factors such as socioeconomic status, healthcare infrastructure, and local governance may have a considerable impact on how healthcare systems respond.

2.2.2.2 Economic Accessibility

NCDs can lead to financial strain for individuals in LMICs due to the expensive requirement of several medications, potentially leading to poverty due to medical expenses (Toebes, 2017). The study by Mwai, (2016) showcases the significant financial implications of NCDs in Kenya. Their research demonstrates that NCDs pose challenges for both individual health and the economic progress of a nation. NCDs result in a greater decrease in household income, leading to a reduction of 28.64%, which is higher compared to the effect of communicable diseases (Mwai, 2016). This economic burden may lock families in a pattern of impoverishment, making it difficult for them to prioritize investing in education, healthcare, and other essential costs. The researchers highlight the increasing expense of dealing with NCDs as a major challenge for families, businesses, and the government, ultimately impeding Kenya's potential for long-term economic development.

Out-of-pocket (OOP) payments are health expenses paid for directly by families, which can impose an immense financial burden on the budgets of households. OOP payments account for 27.7% of total health expenditure, which means that for every Ksh100 spent on healthcare in Kenya, Ksh28 is paid directly from the individual's pocket. The remaining expenses are covered by government subsidies, donors, or insurance (Institute of Economic Affairs, 2024). Limited funds and the availability of healthcare services in Kenya result in many facing challenges, causing them to mainly prioritize seeking curative care over preventive care (Onyango, 2018). Focusing solely on OOP expenses as the main barrier to preventative healthcare in Kenya offers an incomplete picture. While cost is a factor, deeply rooted cultural beliefs often prioritize immediate treatment over prevention. Further, limited access to preventative services, particularly in rural areas, creates a significant obstacle regardless of cost (Subramanian, 2018). The importance of preventive care is often overlooked due to the immediate urgency of health issues, especially for individuals with financial limitations. As a result, the increasing prevalence of these diseases restricts long-term economic growth. These conditions reduce human capital and divert societal resources. The high cost of managing the growing caseload of NCDs affects Kenyan families and increasingly leads to poverty (Muriithi, 2016).

The COVID-19 pandemic has posed major obstacles to providing regular care for NCDs. Studies have indicated that shifting healthcare resources toward dealing with the pandemic crisis, along with increased anxiety among NCD patients and healthcare workers, has led to substantial disruptions in regular NCD care. An academic study examining access to NCD medicines in Kenya during the COVID-19 crisis found that even when academic consortiums provided medicines on credit, the eventual requirement for patients to pay off this debt posed a significant challenge, particularly for lower-income households who already struggle to afford their NCD medications (Kiragu, 2021). These factors have collectively exacerbated the accessibility barriers faced by vulnerable populations in obtaining essential NCD care during the pandemic. Although acknowledging the impact of the pandemic on existing healthcare disparities is important, it is essential to refrain from oversimplifying the situation. Blaming the unequal effects on vulnerable groups only for this worsening could ignore the occurrence of new obstacles. Lockdowns and travel restrictions, for example, limited the ability to physically reach healthcare services, especially for people in rural areas or with few transportation options. The impact of the pandemic on the economy was felt across all social classes (Kiragu, 2021). Therefore, a comprehensive analysis should disentangle the influence of pre-existing disparities from the impact of these novel barriers to provide a more accurate representation of the pandemic's effects on NCD care access for vulnerable populations.

The lack of health insurance presents a barrier to healthcare access for vulnerable populations in Kenya, particularly those residing in rural areas and those from low-income backgrounds (Tawa, 2011). As highlighted by Sherman's (2018) study in Mombasa County, the financial burden of treatment, exemplified by the case of breast cancer patients, forces individuals to make difficult choices, often resorting to loans or asset liquidation (Sherman, 2018). Improving the affordability of essential NCD medications and services through strategies such as universal health coverage, subsidies, and strengthening the public healthcare system will be crucial for enhancing accessibility and ensuring equitable access to care (Ngaruiya et al., 2021).

The research conducted by Caroline, (2018) also addresses a vital concern in the field of sexual, reproductive, maternal, newborn, and adolescent health. The economic obstacles that hinder women and newborns from obtaining necessary healthcare. The study focuses on the importance of economic inequalities in affecting health results, stressing the influence of expensive transportation, service charges, medication costs, informal payments, and lack of knowledge about subsidies (Caroline, 2018). The study identifies a lack of awareness among the community regarding the availability of free or subsidized healthcare but does not investigate the reasons behind this lack of knowledge. Examining the effectiveness of communication strategies in disseminating information about these services may provide valuable insights. Consequently, comprehending the nature, frequency, and causes of these "informal payments" to effectively tackle this obstacle is critical. Further enhancing the study's impact could involve exploring possible solutions like community-based funding or transportation subsidies.

On the other hand, the varying costs of healthcare services raise equity concerns, as patients with greater financial means can obtain higher-quality care from private facilities, while those with limited resources opt for relatively cheaper public options. This can result in treatment delays and potentially adverse health outcomes (Sherman, 2018). While financial capacity significantly influences healthcare access, recognizing the complicated nature of this issue is necessary. Attributing access solely to financial means presents an oversimplified view. A comprehensive understanding of healthcare access necessitates considering geographical, social, cultural, and systemic factors alongside individual finances. A truly equitable healthcare system strives to mitigate the influence of financial disparity, ensuring access to quality care for all, regardless of their economic background.

There is limited data on how Kenyan patients confront and deal with issues related to access and affordability of NCD medicines, as well as their perceptions of quality of care. Many Kenyans, due to limited funds along with the accessibility of healthcare services, seek healthcare primarily for curative rather than preventive reasons (Subramanian, 2018). A study also found that households adopt various coping strategies to manage the economic burden of NCDs, such as avoiding seeking treatment at health facilities or delaying treatment and resorting to self-treatment. These strategies reflect the challenges faced in accessing affordable healthcare services for NCDs (Gitau, 2020). This underlines the substantial OOP expenditure required for the treatment of NCDs, acting as a barrier to accessing care and services for these chronic conditions and potentially leading to financial impoverishment.

At least half of Kenya's health facilities are overseen by private for-profit or not-for-profit entities, showing a significant dependency on the private sector for healthcare services. The yearly expenses for treating hypertension vary from $26 to $234 at public institutions, but private establishments have much higher costs, ranging from $418 to $987. The typical household spends around $412.80 per adult across the country. Yet, this number differs greatly between urban and rural regions, as urban adults typically spend $721.20 while rural adults spend $272.40 on average (Subramanian, 2018). Although the study recognizes the importance of private healthcare facilities, it does not establish a clear connection between this dependence and the high treatment expenses. The researchers note the healthcare spending gap between urban and rural people but fail to explore the possible reasons behind this discrepancy. Is it possible that differences in disease rates, availability of public health services, or income could be factors in this inequality? In addition, the research fails to address the important issue of how this price gap affects drug adherence and, thus, the health results for patients who rely on private healthcare. Does this discrepancy lead to an unequal financial strain on households, especially those in rural regions, impeding their ability to obtain necessary medications and sustain their well-being?

Reports showed that outpatient costs for NCD care average at 3,129.15 Kenyan Shillings. The cost of inpatient care ranged from 1,500 to 1,500,000 Kenyan Shillings, with an average of 35,415.86 Kenyan Shillings. The average outpatient visits for NCD treatment ranges from 13 to 52 visits, regarding healthcare utilization. In terms of hospitalization, the mean number of admissions was 1.09, varying between 1 and 2 admissions (Gitau, 2020). The study leverages a valuable dataset in the Kenya Household and Health Expenditure and Utilization Survey (2018), which provides some economic context. However, it misses the opportunity to connect its findings to the broader economic realities of Kenya and delve into potentially crucial regional variations. This limits the study's ability to provide a comprehensive understanding of how economic factors intersect with NCD burden and healthcare access in Kenya.

2.2.2.3 Non-discrimination accessibility

Within the AAAQ framework, non-discrimination accessibility is identified as a crucial component to guarantee that healthcare facilities, goods, and services are accessible to all individuals, especially the most vulnerable segments of the population (Exworthy, 2011). Research suggests that disparities in health outcomes exist across Kenya's counties, with Mombasa experiencing disproportionately higher rates of NCDs compared to other regions (Achoki, 2019). This may be indicative of underlying inequities in the provision of essential NCD services. MacNaughton (2021) advocates for a detailed understanding of equality and non-discrimination in the attainment of healthcare access for everyone. The writer differentiates between equality, which involves everyone getting identical benefits, and non-discrimination, which guarantees that no one faces unjust disadvantages in accessing healthcare (MacNaughton, 2021). While interconnected, these concepts should be treated distinctly in legal and policy contexts. The author stresses the significance of equality rights and social rights in ensuring fair healthcare systems, proposing that international human rights organizations and domestic courts should implement the concept of one-to-one equality (MacNaughton, 2021). This principle states that every individual should have access to the same health benefits, especially for marginalized groups.

In 2010, Sorkin adopted a multi-stage probability sampling method to study the relationship between perceived racial/ethnic discrimination and perceived healthcare quality in California. The results suggest that African Americans and Asian/Pacific Islanders gave lower ratings to healthcare quality compared to non-Hispanic Whites and Hispanics. Significantly, the link between perceived discrimination and assessments of healthcare quality remained consistent for all racial/ethnic groups, even when adjusting for variables like demographics and healthcare access (Sorkin, 2010). The cross-sectional nature of the study restricts the ability to confirm a causal link between perceived discrimination and ratings of care quality. Whether the differences observed are caused by patient expectations, variations in perception, or actual differences in received care remains uncertain. Additionally, the study's dependence on individuals reporting their own experiences of discrimination may not accurately reflect actual occurrences of discriminatory behaviors.

Rivenbark (2020) conducted a study across France and discovered that discrimination in healthcare facilities is a major issue, especially for women, African or Overseas French immigrants, and Muslims. These groups were at a higher probability of reporting instances of discrimination and, as a result, were more inclined to postpone or opt out of essential medical treatment (Rivenbark, 2020). The research indicates that discrimination experiences might partly account for the healthcare disparities seen among these groups. The cross-sectional design of the study restricts the ability to confirm a causal link between discrimination and healthcare avoidance. Besides, depending on self-reported instances of discrimination may lead to potential prejudices. The study's narrow focus on discrimination in healthcare settings overlooks the larger scope of discrimination that could impact health outcomes indirectly.

2.2.2.4 Information Accessibility

The availability of information plays a critical role in patient-centred care since it enables patients to have power, which is followed by decisions, health literacy, communication, equality in the health facility, and the quality of the delivery of services (Exworthy, 2011). In the present study, health literacy was described as the competence to obtain, understand, and apply general health information, and has been identified as a critical influencer of patient involvement and better health outcomes (Muscat, 2021). This recognition is highly dependent on health literacy and access to health information. Poor health literacy means that people cannot grasp health information, including disease signs, time to seek treatment, and compliance with medical advice, thereby compromising health engagement (Rubenstein, 2016). It is possible to provide people with comprehensible health information that will help them make the right decision about their treatment. Future studies should explore the relationships between health literacy and other dimensions of access in acceptability and availability to obtain an understanding of the real indicators of healthcare utilization and inequity.

Shedrawy et al. (2018) examined perceptions of migrants towards health checks in Stockholm. The researchers discovered that although physical and economic barriers to health examination were negligible, especially with the use of mobile clinics, there was limited information on the examination and the Swedish healthcare system (Shedrawy, 2018). This implies that the mere availability of health care services is insufficient as information on these services must also be well explained and easily understandable by the migrants. However, since this was a qualitative study and the sample size was relatively small and drawn from one region, the results cannot be generalized to all migrants in Sweden. More research should be conducted to examine these matters in other contexts. Literature suggests that with the increased use of digital health technologies, while people may have better access to health information, the digital divide may widen for the less digitally fluent and less connected population (Helsper, 2021).

In a study conducted in Mombasa, while assessing the prevalence of hypertension and obesity among the young and elderly, 59.1% of the respondents said they knew about hypertension and obesity, while 38.2% said they did not know about these diseases. The findings indicated that awareness levels vary across the different age groups. Specifically, the age group 15-20 years had the least disease knowledge, while the age group 63-68 years had the highest awareness level (Kheir, 2023). Education can prevent or minimize the chances of people developing chronic diseases Although the study highlighted that there were differences in awareness across the age groups, it did not explore the rationale behind the differences in awareness, which would have given further insight into the study. The use of self-assessment data in knowledge assessment also has a bias in it. Further, the study has a limitation of a relatively small sample size of 110 respondents, which may fail to represent the actual predicament of Mvita Sub

County accurately. Therefore, a larger and more diverse sample could provide broader and more generalizable data.

Patients receiving breast cancer treatment in Mombasa faced challenges in obtaining thorough and prompt information regarding their condition and treatment choices, which impeded their capacity to make educated choices, navigate the healthcare system proficiently, and engage actively in their care. Even though a large majority of study participants (91%) were happy with the communication they received from healthcare providers, some participants from focus groups said they felt physicians communicated inadequately (Sherman, 2018). The study's limitations regarding communication findings stem from its focus on a specific group of breast cancer survivors, which may not accurately represent the broader population of patients, especially those without support systems. Further, individual perceptions of communication quality may vary based on personal experiences and expectations. As a result, the reported levels of satisfaction may not truly reflect the effectiveness of communication across all healthcare contexts.

Caballero (2023) also highlights the relationship between health behaviors, health status, and continuity of health disparities. The author claims that engagement is crucial to implementing successful health education, especially when it comes to disadvantaged groups. Two key strategies are highlighted: using simple language in communication and creating appropriate methods of distribution of the information. Understanding the reality that populations with low health literacy are common, Caballero emphasizes the use of simple language, few professional terms, and the use of graphics and illustrations (Caballero, 2023). Although Caballero is correct in highlighting the role of health education in reducing health inequities, the study has some constraints. Because the focus is on the communication approaches within these programs only, it fails to capture the systems, social justice, economic context, and healthcare access that play a major role in determining people’s health. The study fails to consider factors of program development and implementation as important factors that define program effectiveness. A more comprehensive approach to the recognition of these factors is needed for a better understanding of health disparities and for developing impactful solutions.

2.2.3 Acceptability of Healthcare Resources

Acceptability emphasizes the need for health services to be appropriate for all groups in a diverse society, accommodating gender, religion, age, disability, and ethnicity. (Exworthy, 2011).

2.2.3.1 Cultural Competency

McQuaid, (2018) investigated the interplay between culture and medication adherence, particularly in the context of chronic conditions and healthcare disparities. The study underscores that cultural beliefs, family experiences, and personal preferences can significantly impact a patient's decision-making process regarding medication, extending beyond clinical risks and benefits. Furthermore, the study highlights documented disparities in healthcare interactions, noting that communication patterns differ between providers and patients of different racial backgrounds (McQuaid, 2018). This disparity often manifests as increased provider verbal dominance and less patient-centred communication with patients of colour compared to white patients. The impact of bias on patient care and adherence is also discussed, acknowledging that while racial concordance between patients and providers can foster positive interactions, it may not necessarily alter established communication patterns (McQuaid, 2018).

Notably, the study highlights the significant role of cultural beliefs surrounding medication necessity and concerns, emphasizing that a confluence of historical, cultural, familial, and personal experiences shapes these beliefs. McQuaid, (2018) underscores how disparities in healthcare access, health literacy, and medication costs disproportionately impact medication adherence among certain racial and ethnic groups. However, further research is required to understand the complicated relationship between culture and medication adherence comprehensively. This suggests that the findings presented serve as a foundation for future investigations into this critical area of study.

Sherman (2018) provided critical insights into the impact of cultural factors on the availability of breast cancer treatment in Mombasa. The researcher noted that 73 percent of the participants found it culturally forbidden to discuss breast cancer openly, which limits interactions with healthcare professionals and early treatment. In addition, the study reveals the social effects of a culture that presents breast cancer as a curse or attributes it to witchcraft (Sherman, 2018).

These beliefs lead to stigma and perceived social rejection, limited support from the family and the community, all of which play a role in making it even harder for the affected people to seek care. The author also points out that the culture of fear and shame around the disease means that patients lose important sources of financial and emotional support as these structures fail during treatment (Sherman, 2018). This kind of data can be useful for obtaining facts regarding experiences and perceptions but may be insufficiently representative of other people or broader communities without quantitative follow-up. The participants could be hesitant and provide limited information about their beliefs and experiences due to the confidentiality of the subject, which is that of prejudice and discrimination, and can cause the problem of social desirability bias and under-estimation of stigmatized attitudes. The major focus goes towards only breast cancer, and conclusions may not apply to other types of cancer or diseases.

Further, a systematic review of culturally competent healthcare systems pinpointed a significant lack of knowledge on the effectiveness of the interventions that have been developed to enhance cultural competence (Anderson, 2003). The authors could not establish sufficient evidence to conclude the effects of such interventions on the outcomes of patients. Anderson (2003) stressed the importance of studying cultural competence with matched control groups that compare the impact of the interventions to the existing practices. The review also emphasized the need to move away from knowledge or attitude change as the outcome measure of health education to more functional outcomes such as patient satisfaction, health service utilization, treatment compliance, and health status. The research also expressed concerns about the absence of research findings on the impact of cultural competence interventions on the elimination of race and ethnicity health gaps (Anderson, 2003). The lack of well-controlled studies comparing the outcomes of cultural competence interventions means that it is difficult to make clear conclusions about the effectiveness of such interventions and to stress the need for further research in this field.

2.2.3.2 Language

Olcoń, (2023) highlights the critical need for culturally responsive care in their study of maternal healthcare for refugees and migrants in New South Wales, Australia. The authors emphasize that language barriers and limited cultural competence among healthcare providers hinder effective communication, strain patient-provider relationships, and ultimately compromise the quality of care delivered. The study underscores a discrepancy between policy advocating for culturally sensitive care and the realities of its implementation. It calls for a shift from individual provider responsibility to a broader organizational commitment to fostering culturally responsive healthcare systems (Olcoń, 2023). The study's geographical focus may limit the generalizability of findings to other regions with differing healthcare landscapes and demographics. Additionally, the qualitative design, while offering rich, contextual insights, poses challenges for broader generalization. Research incorporating quantitative data on service utilization, patient satisfaction, and health outcomes would strengthen these findings. The reliance on self-reported data from healthcare providers introduces potential biases that could influence the reported experiences.

2.2.3.3 Trust/ Rapport

Shedrawy (2018) conducted a study among migrants in Stockholm on their experiences of health examinations, and the findings highlighted a complex understanding of trust in the context of the healthcare relationship. Trust was identified as an overt theme in participants' positive attitudes towards staff courtesy, willingness to accept healthcare advice, and perceived unmet needs. In most cases, participants perceived healthcare staff as friendly and polite, which implies that there is a basic level of interpersonal trust. This trust seemed to be well placed as the participants complied with medical advice and highlighted some shortcomings in the assessments (Shedrawy, 2018). However, the study failed to explore the causes of this observed trust, and as such, questions on the role of cultural factors, past healthcare experiences and particular communication approaches remain unanswered. Further research is needed to appreciate better and foster trust in healthcare interactions with migrants thus contributing to more culturally sensitive and more equitable care.

In examining factors that affect patient trust, Sherman (2018) emphasizes the role of misdiagnosis in influencing patient trust, which can result from difficulties with communication or patients' perceptions of inadequate healthcare worker skills (Sherman, 2018). Although not thoroughly investigated, the study suggests that these issues seriously undermine patient trust in healthcare providers, potentially leading to negative outcomes in patient-provider relationships and overall healthcare delivery. Effective communication and the assurance of competent care are critical for preserving trust and improving healthcare outcomes.

Dyer et al. (2016) stated that patient acceptance of healthcare services relies heavily on trust in healthcare providers and systems. The researchers state that current techniques for evaluating patient satisfaction do not capture all aspects of acceptability and propose replacing acceptability with trust. The liberalization of markets in the health care systems may lead to more patient choice, but it may also lead to the erosion of the patient-doctor trust and the health care system. This breakdown of trust can be a result of disruption of continuity of care since market dynamics may encourage patients to hop from one provider to another. Additionally, the notion that healthcare is increasingly focused on making a profit leads to patient concerns, as the pursuit of financial gains may conflict with the patient's well-being (Dyer, 2016).

The dynamics show the conflict patients experience in balancing their desire to make informed decisions with the need to trust doctors because of the complexity of medical knowledge. Limited practical implications may be derived from the study because the conclusions are anchored mostly on theoretical constructs rather than on the variability of the contexts and populations that exist in the world. This research should prioritize the creation of valid, reliable, and culturally appropriate indices of trust in healthcare. Understanding the impact of culture, economic status, and resource availability on trust building is key. Exploring the effectiveness of policy interventions in sustaining trust among patients, providers, and within the healthcare systems is important.

2.2.4 Quality of Healthcare Resources

Healthcare quality within the AAAQ framework is a concept that is understood by the application of scientific evidence and a skilled workforce. It underlines the need to offer secure, efficient, and suitable services for prevention, identification, and treatment (Tim Exworthy, 2011). This involves the use of evidence-based guidelines, patient-centred care, and analyzing healthcare outcomes.

2.2.4.1 Safety

Sherman (2018), in her study on breast cancer treatment accessibility in Mombasa, Kenya, also provides some concerning findings about the implicit roles of safety in healthcare encounters. Safety concerns are evident through reports of poor surgical outcomes, inadequate equipment and specialized services, and long wait times (Sherman, 2018). These results demonstrate the close relationship between trust and safety in healthcare and how the lack of these qualities can be detrimental to patient outcomes. However, the sample used in this research was comprised only of members of an organized support group of survivors and patients, which is worth noting. Thus, these findings may not be generalizable to the rest of the regions in Mombasa County, where many people may not have access to such support groups. However, for a broader perspective, a large-scale study is needed.

2.2.4.3 Health Outcomes

Health outcomes are increasingly recognized as core indicators of the overall quality of healthcare service delivery. Within the broader quality dimension of the AAAQ framework, patient outcomes, such as improved health status, treatment adherence, and perceived well-being, serve as tangible evidence of effective, acceptable, and timely care.

Mbuthi's study (2013) on service quality in Mombasa County's public healthcare facilities revealed a concern about the low adoption of service quality practices. Although the study identified ten dimensions of service quality, with competence being the most practiced and communication the least, numerous challenges hinder quality healthcare provision. These challenges include inadequate funding, staffing shortages, low staff motivation, lack of senior management support, communication gaps, and insufficient training in quality management (Mbuthi, 2013). The study emphasizes that these inadequacies negatively impact health outcomes and lead patients to seek care elsewhere. However, the study included a management-centric perspective on service quality and a potentially flawed comparison of public healthcare patients to private sector customers.

The challenges identified in both Mbuthi's study (2013) and Sherman's (2018) research suggest that current healthcare practices may be falling short of delivering the desired outcomes. Barriers such as inadequate training, lack of support from management, and communication gaps must be resolved to improve health outcomes and ensure that healthcare services effectively meet the needs of the population (Mbuthi, 2013; Sherman, 2018). An extensive assessment of healthcare procedures is vital to pinpoint areas needing improvement and introduce methods that promote improved health results.

2.3 Research Gaps

Table 2.1- Summary of Research Gaps Identified from Literature Review That Informed the Current Study

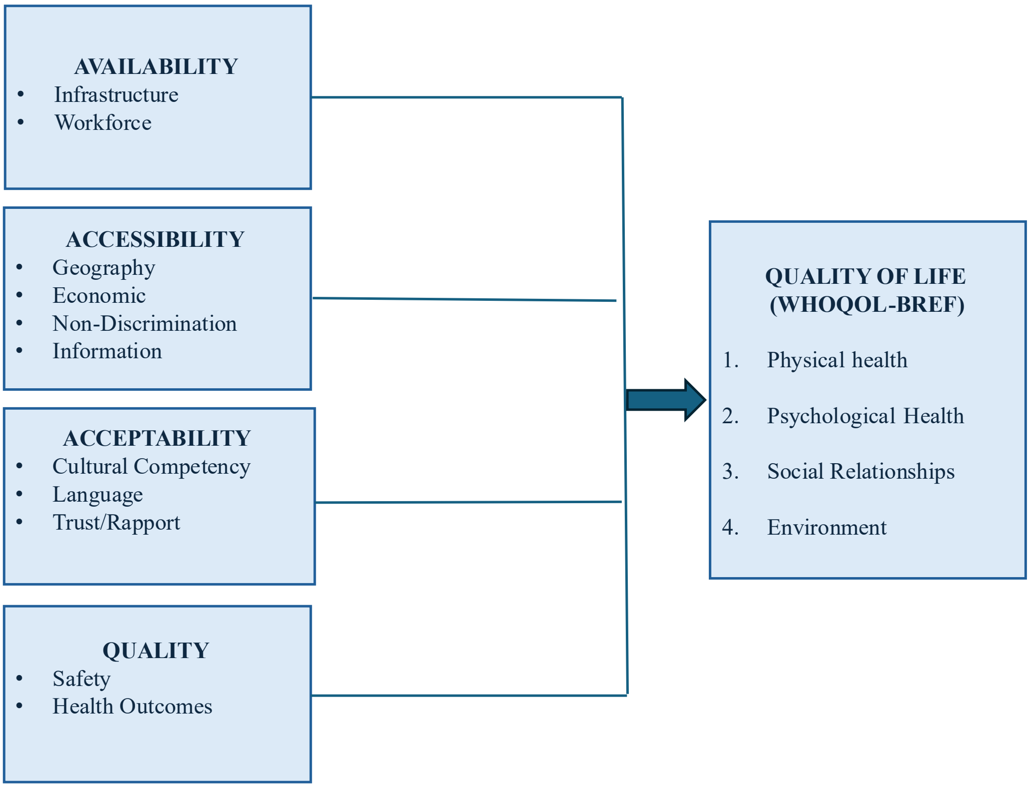
Identified Research Gap	Definition / Nature of the Gap	Source(s)	Relevance to Current Study
Inadequate Access to Essential NCD Medications and Diagnostic Services	Lack of availability, affordability, and geographic access to essential tools for effective NCD diagnosis and treatment.	Onyango, 2018; Sherman, 2018; Kheir, 2023	Justified analysis of availability and accessibility in Mombasa County.
Substandard Quality of NCD Care	Poor adherence to care guidelines, inadequate training, and lack of necessary equipment in NCD service delivery	Mbuthi, 2013; Gitau, 2020; WHO, 2022	Informed focus on quality of healthcare as a dimension of service delivery.
Lack of Culturally Sensitive NCD Care	Failure to consider socio-cultural dynamics leading to poor uptake of services	McQuaid, 2018; Sherman, 2018; Olcoń, 2023	Supported inclusion of acceptability as a key variable.
Poor Integration of NCD Care into Health Systems	NCD services are poorly linked with existing primary care structures, creating fragmentation	Van Wilder, 2020; WHO, 2023	Reinforced need to study NCD care as experienced across multiple facility types.

Low Health Literacy Related to NCDs	Patients lack understanding of NCDs and treatment options, impairing disease self-management.	Berkman et al., 2011; Rubenstein, 2016	Informed patient interviews and analysis of perception-based quality indicators
Inadequate Data and Monitoring Systems	Weak or missing systems to collect data on NCD interventions and outcomes.	WHO, 2019; Achoki et al., 2019	Motivated use of standardized tools like AAAQ and WHOQOL-BREF for robust data.
High Out-of-Pocket Expenditure	NCD care causes financial hardship due to lack of insurance or subsidies.	Muriithi, 2016; Mwai, 2016	Highlighted need to consider economic barriers in access and quality analysis
Limited Studies on Patient Perceptions in NCD Management	Few studies assess how patients view the quality and accessibility of services, especially in Kenya.	Ammoun, 2022; Kazibwe et al., 2021	Directly shaped the study's research questions on perceived availability, accessibility, acceptability, and quality.
Insufficient Data on Socioeconomic Factors and NCD Access	Lack of comprehensive analysis of how income, education, and geography affect NCD service delivery.	Sherman, 2018; Karugu et al., 2024	Guided the inclusion of demographic stratification in the analysis

Underrepresentation of Rural Populations in NCD Research	Overemphasis on urban settings in existing studies, ignoring rural experiences.	Sherman, 2018; KNBS, 2022	Ensured inclusion of rural and peri-urban subpopulations in the sampling frame.

2.4 Conceptual Framework

In this study, "good quality of life" is defined based on participants' WHOQOL-BREF scores. This categorization is purely descriptive and does not imply any causal relationships. The study explores associations between perceived healthcare service delivery (using the AAAQ framework) and QoL outcomes as reported by patients. Service delivery factors, including availability, accessibility, acceptability, and quality, are treated as independent variables, while QoL is the dependent variable. The aim is to understand how patients' experiences and perceptions relate to their reported well-being, without making inferential or predictive claims



2.3.1 Relationship between AAAQ Healthcare Dimensions and Quality of Life (measured by the WHOQOL-BREF tool) in NCD Management. (See Table 8, Appendix A)

2.5 Summary

The review focuses on the diverse and complex issues impacting healthcare delivery globally, as well as in Kenya and Mombasa County in particular. Despite ongoing efforts to improve healthcare, major gaps remain. This study is well-positioned to build on these empirical findings by providing a detailed analysis of local processes and contexts, revealing valuable insights that can inform more successful public health efforts for disease control and eradication.

Utilizing the AAAQ framework alongside the WHOQOL-BREF tool, policymakers, healthcare providers, as well as researchers, will gain a better understanding of NCD management challenges and key areas for intervention. This integrated approach will help identify healthcare delivery gaps, addressing the need for system improvements, cultural sensitivity, and higher-quality NCD care.

CHAPTER 3

3.1. Introduction

This chapter outlines the research methodology employed in the study, detailing various techniques including research design, population and sampling, data collection methods, data analysis approaches, research quality assurance, and ethical considerations. The study is focused on Coast General Teaching and Referral Hospital (CGTRH) in Mombasa County, providing a comprehensive framework for investigating healthcare service delivery (HSD) at the facility.

3.2 Research Philosophy

This study on the perceptions and outcomes of healthcare delivery in non-communicable disease (NCD) management in Mombasa County was guided by a positivist research philosophy, employing a purely quantitative approach. Positivism is grounded in the belief that reality is objective and can be observed and measured through empirical investigation. In line with this philosophy, the study focused on collecting quantifiable data on the availability, accessibility, acceptability, and quality of healthcare services for patients with hypertension and diabetes. Structured surveys and statistical analyses were used to objectively examine the relationship between healthcare service delivery (HSD) and patient outcomes, specifically quality of life (QoL). This approach ensured that findings were based on observable, verifiable evidence, allowing for the development of generalizable conclusions and evidence-based recommendations.

3.3. The Research Design

The research took place in Mombasa County, Kenya, specifically at Coast General Teaching and Referral Hospital (CGTRH). This study gathered data at a specific point in time, employing a descriptive cross-sectional research design. It provided an assessment of HSD and obstacles to NCD management, capturing the experiences of individuals who reside in urban, suburban, and rural areas.

3.3 Population and Sampling

3.3.1 Target Population

Mombasa County's diverse demographic composition includes urban, suburban, and rural populations, representing various socioeconomic and cultural backgrounds. The target population for this study consists of adults aged 18 years and above residing in Mombasa County who have been diagnosed with hypertension, diabetes, or both. NCDs, such as hypertension, diabetes, cervical cancer, and conditions related to drug and substance abuse.

While comprehensive data on these conditions is limited, emerging evidence identifies cancer and cardiovascular diseases as leading causes of morbidity and mortality. NCDs collectively account for 27% of the disease burden in Mombasa, reflecting a significant and growing public health challenge (MCHR, 2018). According to the 2019 Kenya Population and Housing Census, Mombasa County had a total population of 1,208,333, comprising 610,257 males and 598,046 females. The population has grown steadily from 341,148 in 1979 to over 1.2 million in 2019 (Mombasa County, 2023). These figures form the basis for estimating the study population size. Participants in this study will include individuals of both genders to ensure balanced representation. Recruitment will focus on patients receiving care at the CGTRH.

To estimate the population size and ensure accurate projections, secondary data was sourced from the Health Information System at CGTRH. These records provided detailed information on patients diagnosed and managed for hypertension and diabetes within the hospital. This approach ensured that the target population was well-defined, representative of the study's objectives, and grounded in reliable, documented data sources.

3.3.2 Study Population

The study targeted patients diagnosed with non-communicable diseases (hypertension, diabetes, or both) who were receiving care at Coast General Teaching and Referral Hospital (CGTRH) and met defined inclusion and exclusion criteria. Eligible participants included individuals aged 18 years and above who had been diagnosed with at least one NCD and had been undergoing treatment or follow-up care at CGTRH for a minimum of six months. This six-month threshold was based on the study’s operational definition to ensure that participants had adequate time for treatment initiation, the development of clinical and behavioral patterns, and meaningful engagement with the healthcare system, thereby enabling more reliable insights into their perceptions, experiences, and treatment outcomes (Tharakan, 2024). Additionally, participants were required to be capable of providing informed consent. Patients were excluded if they presented with acute medical conditions requiring immediate care that could interfere with their ability to participate, or if they had language or cognitive barriers that prevented them from understanding the study procedures.

3.3.3 Sample Size Estimation

The population for this study consisted of adult patients (18 years and older) diagnosed with hypertension, diabetes, or both, who are actively receiving care at CGTRH in Mombasa County. The total number of such patients, as recorded by the CGTRH's medical records department, is 6,046 individuals. The unit of analysis was the individual patient, as the study aims to assess patient-level perceptions and outcomes related to HSD and QoL.

For this study, a representative sample was be drawn from CGTRH, which serves a diverse population, including urban, suburban, and rural residents. Yamane's formula for calculating representative sample size is a simple method to estimate sample size for a finite population. It's particularly useful in survey research and statistical studies when you have a known population size and want to draw a representative sample. In this study, the population size of those patients with diabetes and hypertension is known and is finite. The Yamane formula will therefore help us determine the number of respondents required to achieve statistically reliable and representative results.

$$n = \frac{N}{1 + N(e)^2}$$

Where:
n = Sample Size.
N = Whole population under study.
e = Sampling Error of 0.05

A sampling error (e) of 0.05 was been established to ensure acceptable accuracy in the results. The calculated sample size was approximately 375 respondents. This sample provided a robust representation of the population served by the hospital, enabling us to derive meaningful insights from the study. This carefully calculated sample size helped ensure that the findings are both reliable and valid, contributing valuable knowledge to the healthcare landscape in Mombasa County.

3.3.4 Sampling Technique

The population for this study was identified using the medical records database at CGTRH, which provided a comprehensive list of adult patients diagnosed with hypertension, diabetes, or both, who were actively receiving care at the facility. This database formed the basis for defining the sampling frame and ensuring that all eligible patients were included.

To achieve representative participation, stratified sampling was employed. The population was divided into three strata based on disease type: patients with hypertension only, diabetes only, and both conditions. This stratification was necessary to ensure proportional representation of each subgroup, reflecting their actual prevalence within the total patient population (N=6,046).

Within each stratum, participants were selected using sequential sampling, where patients were recruited in the order they became available until the predetermined sample size was reached. This approach was appropriate given that the order of patient availability was unpredictable.

The proportional allocation of the sample size to each stratum was determined by the prevalence of each group within the total population. For example, the diabetes-only group, representing approximately 52% of the population, was allocated 194 respondents out of the total sample of 375. The hypertension-only and combined conditions groups were allocated samples proportional to their respective prevalence rates.

This stratified sampling approach ensured that minority groups were adequately represented, allowing for reliable comparative analysis across patient categories and improving the study’s overall validity and generalizability. While the study did not further stratify by demographic characteristics such as age or gender within each disease group, the chosen technique allowed for a robust analysis of the impact of disease type on perceptions and outcomes.

3.4 Data Collection Methods

The research adopted a descriptive cross-sectional design and employed a quantitative methodology to gather data. It utilized structured questionnaires based on the AAAQ framework and the WHOQOL-BREF tool for assessing HSD and QoL, respectively. Data was collected from adult residents (18 years and older) who had been diagnosed with hypertension or diabetes, as these NCDs are prevalent in the region. The study population included participants from various socioeconomic backgrounds and educational levels to ensure inclusivity. Survey tools and communication materials were provided in Swahili and English to accommodate language diversity in the region.

The study evaluated perceptions of HSD using questionnaires. An analysis was performed to explore the associations between these perceptions and QoL outcomes. Ethical considerations, including informed consent and data confidentiality, were strictly adhered to throughout the research process.

The data collection process was structured and conducted using a structured questionnaire with 5-point Likert scale questions to assess perceptions of healthcare services (availability, accessibility, acceptability, and quality) and their impact on QoL outcomes. The questionnaire was administered in a drop-and-pick format, allowing participants to complete the survey during their clinic visit at the NCD clinic in CGTRH. Potential respondents were identified by the clinic staff upon arrival at the NCD clinic. The study representative then screened the participants according to the inclusion criteria.

After explaining the study, the data collector provided a detailed consent form (see Appendix E), ensuring that participants understood their involvement was both voluntary and confidential. The consent process emphasized that respondents had the right to withdraw from the study at any point without it affecting their access to healthcare. It also assured them of the anonymity and confidentiality of their data and communicated the purpose of the research to promote transparency.

The respondents were encouraged to ask questions before signing the consent form. Before participation, participants were informed of their data rights and were asked to provide explicit consent for the use of the collected data for this research. Only after receiving their written consent did the participants proceed to enter the study. Those who denied or refused to give consent continued to receive their usual care. After obtaining approval, the patients were requested to complete the organized questionnaire in the waiting room before the doctor's appointment. The survey took 10-15 minutes. Although the participants themselves completed the survey, survey representatives were on hand to help if any issues arose with understanding or completing the survey.

After completing the survey, patients proceeded with their clinic visit and engaged with their doctor as usual. The data collection process will not interfere with their medical consultation or treatment. The research followed strict guidelines for the collection and processing of personal data, as outlined in the Data Protection Handbook by the Office of the Data Protection Commissioner. To ensure compliance with data protection principles, the study used data minimization strategies, gathering only the information required for the study while maintaining data accuracy and security. All completed surveys were securely collected, coded to maintain participant anonymity, and stored in locked cabinets and password-protected databases.

3.6 Data Analysis

This section describes how data were managed and analyzed to establish the socio-demographic profile of participants and examine their responses to Likert scale items. The Principal Investigator reviewed hard-copy questionnaires daily to ensure completeness and consistency. The collected data were then entered into a Microsoft Access database. To minimize data entry errors, double data entry was conducted.

Descriptive Statistics

Socio-demographic variables such as gender, marital status, religion, and occupation were treated as categorical and summarized using frequencies and percentages. Continuous variables, including age, were described using means and standard deviations (see Appendix A, Table 1). Responses to Likert scale items were coded on a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). For ease of interpretation, some of these responses were recoded into binary categories—for example, scores of 1 to 3 were grouped as "Disagree/Neutral" and scores of 4 to 5 as "Agree"—and presented as frequencies and percentages (Appendix A, Tables 2–5).

The analytical approach focused on examining the relationship between the dependent variable, quality of life (QoL), as measured by the WHOQOL-BREF tool, and the independent variables of healthcare service delivery: availability, accessibility, acceptability, and quality.

An exploratory analysis was first conducted through crosstabulations to examine associations between categorical variables. These associations were described using frequencies and percentages (Appendix A, Table 6). This was followed by inferential analysis using binary logistic regression to assess the association between the independent variables and the binary-coded dependent variable. Both crude and adjusted odds ratios (ORs), along with 95% confidence intervals (CIs), were calculated to determine the strength and direction of associations. Adjustments were made for potential confounding variables such as age, gender, and socioeconomic status. A p-value of less than 0.05 was considered statistically significant (Appendix A, Table 7).

Study findings were presented using a combination of tables, graphs, and figures to clearly illustrate data trends and highlight significant associations. These included a demographic summary table of participant characteristics (Appendix A, Table 1) and graphical representations of key relationships between the independent and dependent variables.

Presentation of Findings:

The study findings were presented using tables, graphs, and figures to effectively visualize data trends and emphasize significant associations. This included a demographic summary table outlining participant characteristics (Appendix A, Table 1), as well as graphical illustrations depicting key relationships between the independent and dependent variables..

3.6 Research Quality

3.6.1 Validity

Content validity was ensured through expert review by supervisors. The WHOQOL-BREF instrument, which was used to assess Quality of Life, has been previously validated through content, construct, and criterion-related validity. Its cross-cultural reliability allowed it to capture culturally relevant perceptions of QoL across different participant backgrounds (WHOQOL, 2012).

3.6.2 Reliability

Data collectors were trained to maintain consistency and adhere to standard data collection procedures. The WHOQOL-BREF tool demonstrated high internal reliability, with domain-specific items closely related to each other. Internal consistency was assessed using Cronbach's alpha, and test–retest reliability ensured that scores remained stable over time, provided participants' health conditions had not changed (WHOQOL, 2012).

3.6.3 Objectivity

Bias was minimized by using validated survey instruments with standardized questions. Data collectors were uniformly trained to follow the same protocols during data collection. A pilot test was conducted prior to the main study to refine the questionnaire and ensure clarity. The quantitative nature of the study allowed for objective measurement and statistical analysis, enhancing the reliability and generalizability of findings.

3.7 Ethical Consideration

Ethical approval for the study was obtained from the relevant institutional review boards, specifically the Strathmore University Institutional Research Ethics Committee (SU IREC) and the National Commission for Science, Technology and Innovation (NACOSTI), prior to data collection. All participants received a clear explanation of the study's purpose, procedures, and potential risks and benefits. Informed consent was obtained before participation. Anonymized codes were used in reporting to protect participant confidentiality. Participants were made aware of their right to withdraw from the study at any point without consequence. Engagement with local communities was prioritized to ensure cultural sensitivity and community awareness throughout the study.

CHAPTER 4

4.1 Introduction

This chapter presents the findings from the study involving 375 adult patients aged 18 years and above, diagnosed with non-communicable diseases (NCDs), hypertension, diabetes, or both, who had received care at Coast General Teaching and Referral Hospital (CGTRH) for at least six months. The study aimed to examine how perceptions of health service delivery (HSD), specifically cultural sensitivity, trust, and healthcare provider attitudes, influence patients' experiences and interactions with the health system. This study investigated how individuals with NCDs, specifically hypertension and diabetes, perceived the delivery of healthcare services in Mombasa County and how these perceptions influenced their health-seeking behaviour and treatment adherence. It further examined the impact of these perceptions on patients' overall quality of life (QoL), assessed across physical, psychological, social, and environmental domains using the WHOQOL-BREF tool.

4.1.1 Demographic Characteristics

Table 4.1 summarizes the demographic characteristics of the study participants. Approximately 49% of participants were male, indicating a nearly even gender distribution.

Most participants were married (61.1%), and the majority had attained at least secondary education. Employment patterns varied, with over half engaged in either full-time or self-employment. More than half of the participants reported a monthly household income of less than KShs 10,000. The median age of participants was 45 years (IQR = 21), reflecting a middle-aged study population. Most respondents resided in suburban or urban areas, consistent with the study's setting. Regarding medical conditions, high blood pressure was the most reported (36.5%), followed closely by high blood sugar (31.7%). An additional 31.7% of participants indicated they were living with both conditions.

Table 4.1: Demographic characteristics

Variables	**Values**
Marital Status	
Married	229 (61.1%)
Single	55 (14.7%)
Divorced	53 (14.1%)
Widowed	38 (10.1%)
Education Level	
No formal education	31 (8.3%)
Primary education	60 (16.1%)
Secondary education	131 (35.1%)
Higher education	151 (40.5%)
Occupation	
Employed (full-time)	104 (27.8%)
Self-employed	116 (31.0%)
Unemployed	79 (21.1%)
Retired	54 (14.4%)
Student	21 (5.6%)
Household Income	
Less than KShs 10,000	198 (52.8%)
KShs 10,000 - KShs 29,999	98 (26.1%)
KShs 30,000 - KShs 49,999	68 (18.1%)
KShs 50,000 - KShs 99,999	11 (2.9%)
Residential area	
Urban	134 (35.9%)
Suburban	150 (40.2%)
Rural	89 (23.9%)
Medical condition patient has	
High blood sugar	119 (31.7%)
High blood pressure	137 (36.5%)
Both	119 (31.7%)

4.1.2 Patients' perceptions about available healthcare services and how relevant these resources are to their care

A notable portion of participants expressed uncertainty or dissatisfaction with the availability of healthcare resources, particularly staffing, medications, diagnostic tests, and access to specialists. While some respondents reported consistent availability, others cited occasional or frequent shortages, underscoring variability in service provision across facilities. As shown in Table 4.2, the majority of the 375 participants (76.5%) perceived healthcare resources to be available to them.

Table 4.2: Availability of Healthcare Resources

Variables	**Values**
Feel there are enough healthcare workers at the facility	
Yes, always	139 (37.1%)
Yes, sometimes	151 (40.3%)
No, there are usually not enough staff	77 (20.5%)
Not sure	8 (2.1%)
How often are the medications you need available?	
Always available	89 (23.7%)
Mostly available	136 (36.3%)
Sometimes available	105 (28.0%)
Rarely available	39 (10.4%)
Never available	6 (1.6%)
Able to access the necessary tests	
Always	97 (26.1%)
Most of the time	122 (32.8%)
Sometimes	98 (26.3%)
Rarely	51 (13.7%)
Never	4 (1.1%)
How often can see a specialist?	
Always available	90 (24.0%)
Mostly available	128 (34.1%)
Sometimes available	111 (29.6%)

Rarely available	42 (11.2%)
Never available	4 (1.1%)

4.1.3 Perceived Accessibility of Healthcare Services and Importance of Accessibility to Care

While many respondents perceived healthcare resources as generally accessible, several barriers were identified. Financial strain emerged as a major concern, with many individuals reporting challenges due to transport costs and limited insurance coverage. As a result, they often relied on personal savings, loans, or family support to afford care. A significant number acknowledged that these financial constraints had, at times, interfered with treatment adherence and even contributed to adverse health outcomes.

Geographic and systemic disparities were also apparent. Differences in healthcare costs between urban and rural areas were frequently mentioned, and travel distance was commonly cited as a barrier to accessing services. Perceptions of inclusivity and communication varied: some individuals felt misunderstood or not adequately heard by healthcare providers, prompting many to seek further clarification regarding their diagnoses and treatments. Additionally, understanding and accessing health information proved challenging for some respondents. Nonetheless, a fair number viewed digital health tools as helpful in enhancing comprehension and supporting self-management of chronic illness. As shown in Table 4.3, a majority of participants (68.0%) perceived healthcare resources to be accessible to them.

Table 4.3: Accessibility of Healthcare Resources

Variables	**Values**
Time taken to reach healthcare facility	
Less than 30 minutes	61 (16.3%)
30 minutes to 1 hour	221 (59.1%)
1-2 hours	74 (19.8%)
More than 2 hours	18 (4.8%)
How often travel distances prevent healthcare services access	
Always	74 (19.9%)
Often	103 (27.7%)
Sometimes	134 (36.0%)

Variables	Values
Rarely	32 (8.6%)
Never	29 (7.8%)
If transport costs impact the ability to seek healthcare services	
Strongly Agree	71 (19.0%)
Agree	126 (33.8%)
Neutral	91 (24.4%)
Disagree	61 (16.4%)
Strongly Disagree	24 (6.4%)
Has health insurance that supports NCD treatment	
Yes	70 (18.7%)
No	193 (51.5%)
Partial Coverage	89 (23.7%)
Not Sure	23 (6.1%)
How they manage the costs associated with care	
Using savings	125 (33.4%)
Taking loans	57 (15.2%)
Receiving family support	120 (32.1%)
Community support	53 (14.2%)
Delaying or avoiding care	19 (5.1%)
Description of cost of healthcare in the area	
Very Affordable	56 (15.0%)
Affordable	112 (29.9%)
Neutral	88 (23.5%)
Expensive	96 (25.7%)
Very Expensive	22 (5.9%)
If they notice difference in healthcare costs between urban and rural areas	
Yes	167 (45.0%)
No	122 (32.9%)
Unsure	82 (22.1%)
If treatment costs ever affected treatment adherence	
Yes	222 (59.4%)

Variables	Values
No	152 (40.6%)
If ever experienced a negative health outcome	
Yes	129 (34.4%)
No	174 (46.4%)
Prefer not to say	72 (19.2%)
If ever felt discrimination affected access to care	
Often	57 (15.3%)
Sometimes	117 (31.4%)
Rarely	135 (36.2%)
Never	64 (17.2%)
Believe healthcare services are inclusive and considerate	
Strongly Agree	40 (10.7%)
Agree	112 (30.0%)
Neutral	125 (33.5%)
Disagree	67 (18.0%)
Strongly Disagree	29 (7.8%)
How well they understand their diagnosis and treatment	
Very Well	71 (19.0%)
Well	106 (28.3%)
Neutral	116 (31.0%)
Poorly	59 (15.8%)
Very Poorly	22 (5.9%)
How easily can access diagnosis and treatment information	
Very Easily	70 (18.7%)
Easily	96 (25.6%)
Neutral	109 (29.1%)
Difficult	69 (18.4%)
Very Difficult	31 (8.3%)
Feeling about understanding of information received	
Very easy to understand	68 (18.5%)
Easy to understand	107 (29.2%)
Neutral	90 (24.5%)

Variables	Values
Difficult to understand	67 (18.3%)
Very difficult to understand	35 (9.5%)
How often seeks additional information	
Very often	74 (19.8%)
Often	106 (28.3%)
Occasionally	119 (31.8%)
Rarely	54 (14.4%)
Never	21 (5.6%)
Satisfaction with healthcare providers communications	
Very satisfied	49 (13.1%)
Satisfied	123 (32.9%)
Neutral	97 (25.9%)
Dissatisfied	62 (16.6%)
Very dissatisfied	43 (11.5%)
Feelings on healthcare provider listening to concerns and preferences	
Very much	65 (17.4%)
Somewhat	120 (32.2%)
Neutral	100 (26.8%)
Not much	50 (13.4%)
Not at all	38 (10.2%)
Health information effects on ability manage chronic illness	
Very well	73 (19.5%)
Well	114 (30.5%)
Neutral	111 (29.7%)
Poorly	52 (13.9%)
Very poorly	24 (6.4%)
Digital health information help on health understanding	
Strongly agree	75 (20.0%)
Agree	121 (32.3%)
Neutral	96 (25.6%)
Disagree	48 (12.8%)

Variables	Values
Strongly disagree	35 (9.3%)

4.1.4 Perception of Acceptability of Healthcare Services Among Hypertensive and Diabetic Patients and the Importance of These Factors Towards Their Care

While just over half of the respondents considered healthcare services acceptable overall, several underlying concerns emerged. A significant number emphasized the importance of providers understanding and respecting their cultural backgrounds. However, experiences varied, many patients felt their beliefs were either not respected or only acknowledged to a limited extent.

Cultural and language barriers were reported frequently, highlighting gaps in culturally sensitive care. Trust in healthcare providers also varied widely, with only a minority expressing complete confidence in the care they received. These findings underscore the need to strengthen cultural competence and respectful communication to enhance the perceived acceptability of healthcare services. As shown in Table 4.4, a majority of participants (55.2%) perceived healthcare resources to be acceptable.

Table 4.4: Acceptability of Healthcare Resources

Variables	Values
Importance of understanding healthcare providers' cultural backgrounds	
Very important	105 (28.2%)
Important	143 (38.4%)
Neutral	91 (24.5%)
Not important	26 (7.0%)
Not at all important	7 (1.9%)
Experienced cultural beliefs sensitive/ insensitive healthcare provider	
Yes, sensitive	116 (30.9%)
Yes, insensitive	150 (40.0%)
No, not applicable	84 (22.4%)
Not sure	25 (6.7%)

Extent to which cultural beliefs are respected by healthcare provider	
Very much	70 (18.8%)
Somewhat	123 (33.0%)
Neutral	104 (27.9%)
Not much	52 (13.9%)
Not at all	24 (6.4%)
How often experience language /cultural barriers when seeking treatment	
Often	62 (16.6%)
Sometimes	151 (40.5%)
Rarely	112 (30.0%)
Never	48 (12.9%)
If healthcare services are tailored to meet the needs of the community	
Yes, very well	56 (15.0%)
Yes, somewhat	109 (29.1%)
Neutral	109 (29.1%)
No, not much	71 (19.0%)
No, not at all	29 (7.8%)
If cultural beliefs influence adherence to treatment	
Yes	98 (26.1%)
No	183 (48.8%)
Unsure	94 (25.1%)
Extent to which you trust healthcare provider to deliver effective care	
Completely	60 (16.0%)
Mostly	148 (39.6%)
Neutral	88 (23.5%)
Somewhat	50 (13.4%)
Not at all	28 (7.5%)

4.1.5 Perception of Patients with Hypertension and Diabetes on The Quality of Healthcare Services and How Relevant These Resources are to their Care

Although most respondents rated healthcare services as generally high in quality, several critical areas highlighted the need for improvement. Many patients expressed only moderate confidence in healthcare providers' clinical skills and communication abilities. A significant number also reported dissatisfaction with how well providers involved them in treatment decisions or listened to their concerns.

Delays in care were another commonly reported issue, with several individuals facing challenges in scheduling timely appointments and experiencing long waiting times. Additionally, not all respondents felt that the care they received was consistently safe or effective, pointing to variability in service delivery and patient experiences. These findings underscore the need for improvements in responsiveness, provider-patient communication, and overall reliability of care. As shown in Table 4.5, a majority of participants (75.7%) perceived healthcare resources as being of good quality.

Table 4.5: Quality of Healthcare Resources

Variables	**Values**
Safety of healthcare services received	
Very safe	51 (13.6%)
Safe	129 (34.4%)
Neutral	94 (25.1%)
Unsafe	69 (18.4%)
Very unsafe	32 (8.5%)
Extent to which believes services received are effective	
Very effective	51 (13.6%)
Effective	143 (38.1%)
Neutral	95 (25.3%)
Ineffective	61 (16.3%)
Very ineffective	25 (6.7%)
How well healthcare providers explain treatment options and involve patient in decision making	
Very well	65 (17.4%)
Well	110 (29.5%)
Neutral	115 (30.8%)
Poorly	59 (15.8%)
Very poorly	24 (6.4%)

Extent to which you feel healthcare provider listens to your concerns	
Very much	91 (24.3%)
Somewhat	130 (34.7%)
Neutral	85 (22.7%)
Not much	43 (11.5%)
Not at all	18 (4.8%)
Very dissatisfied	8 (2.1%)
Rating of waiting times for receiving care at the healthcare facility	
Very short	49 (13.1%)
Short	91 (24.3%)
Average	167 (44.7%)
Long	51 (13.6%)
Very long	16 (4.3%)
How often face difficulties in scheduling appointments /receiving timely care	
Very frequently	56 (15.0%)
Frequently	92 (24.6%)
Occasionally	146 (39.0%)
Rarely	47 (12.6%)
Never	33 (8.8%)
Confident in skills and knowledge of the healthcare provider	
Very confident	53 (14.2%)
Confident	109 (29.1%)
Neutral	126 (33.7%)
Not confident	54 (14.4%)
Not at all confident	32 (8.6%)
Rating of communication skills of the healthcare provider	
Excellent	62 (16.7%)
Good	124 (33.4%)
Fair	115 (31.0%)
Poor	51 (13.7%)
Very poor	19 (5.1%)
Rating on overall satisfaction with the healthcare provider	
Very satisfied	61 (16.4%)

Satisfied	143 (38.4%)
Neutral	106 (28.5%)
Dissatisfied	44 (11.8%)
Very dissatisfied	18 (4.8%)

4.1.6 Importance of Availability, Accessibility, Acceptability, and Quality When Receiving Health Care

While respondents generally recognized all four dimensions- availability, accessibility, acceptability, and quality as important to varying degrees, availability of services stood out as the top priority for most. Interestingly, although quality and acceptability were acknowledged as important, fewer participants ranked them as their most critical concern compared to availability and accessibility. This suggests that while service quality and cultural compatibility matter, the foremost concern for many individuals remains whether and how easily they can access healthcare in the first place, as seen in Table 4.6.

Table 4.6: Importance of Availability, Accessibility, Acceptability, and Quality

Variables	Values
Availability of Healthcare Services	
Not important	32 (8.6%)
Slightly important	78 (21.0%)
Moderately important	109 (29.3%)
Important	91 (24.5%)
Very important	62 (16.7%)
Accessibility of Healthcare Services	
Not important	44 (11.7%)
Slightly important	61 (16.3%)
Moderately important	103 (27.5%)
Important	89 (23.7%)
Very important	78 (20.8%)
Acceptability of Healthcare Services	
Not important	22 (5.9%)
Slightly important	39 (10.4%)
Moderately important	109 (29.1%)
Important	122 (32.5%)

Very important	83 (22.1%)
Quality of Healthcare Services	
Not important	34 (9.1%)
Slightly important	56 (14.9%)
Moderately important	100 (26.7%)
Important	97 (25.9%)
Very important	88 (23.5%)
Which of the following do you think is the most important for you	
Availability of services	142 (38.0%)
Accessibility of services	129 (34.5%)
Acceptability of services	52 (13.9%)
Quality of services	51 (13.6%)

4.1.7 Cross Tabulation

Across all three patient groups, those with hypertension only, diabetes only, and both conditions, a consistent trend emerged: individuals who perceived healthcare resources as available, accessible, acceptable, and of good quality were more likely to report a better quality of life. Conversely, participants who reported deficiencies in these dimensions tended to have poorer quality-of-life outcomes.

Notably, the quality of healthcare services demonstrated the strongest positive association with good quality of life across all strata, particularly evident in the hypertension-only group (89.7% reporting good QoL) and the diabetes-only group (81.8%). In contrast, acceptability showed a more variable influence, especially among diabetes patients, where only 33.3% of those perceiving services as unacceptable reported good quality of life. These associations are detailed in Table 4.7, which presents the cross-tabulation of healthcare service perceptions against quality-of-life outcomes across all three patient groups.

Table 4.7: Cross-tabulation table

Stratum/ Healthcare Variable	QoL Poor	QoL Good	Totals
Stratum 1: Hypertension only (n=137)			
Availability of healthcare resources			
Available	76 (77.6%)	33 (84.6%)	109 (79.6%)
Accessibility of healthcare resources			
Accessible	68 (69.4%)	32 (82.1%)	100 (73.0%)
Acceptability of healthcare resources			
Acceptable	62 (63.3%)	22 (56.4%)	84 (61.3%)
Quality of healthcare resources			
Quality	72 (73.5%)	35 (89.7%)	107 (78.1%)
Stratum 2: Diabetes only (n=119)			
Availability of healthcare resources			
Available	59 (68.6%)	24 (72.7%)	83 (69.7%)
Accessibility of healthcare resources			
Accessible	55 (64.0%)	23 (69.7%)	78 (65.5%)
Acceptability of healthcare resources			
Not acceptable	50 (58.1%)	11 (33.3%)	61 (51.3%)
Quality of healthcare resources			
Quality	58 (67.4%)	27 (81.8%)	85 (71.4%)
Stratum 3: Both Diabetes and Hypertension (n=119)			
Availability of Healthcare Resources			
Available	64 (78.0%)	31 (83.8%)	95 (79.8%)
Accessibility of healthcare resources			
Accessible	51 (62.2%)	26 (70.3%)	77 (64.7%)
Acceptability of healthcare resources			
Acceptable	46 (56.1%)	19 (51.4%)	65 (54.6%)
Quality of healthcare resources			
Quality	63 (76.8%)	29 (78.4%)	92 (77.3%)

4.2 Quality of Life

WHOQOL-BREF scores were calculated according to the guidelines provided in Appendix D. First, we ensured that no item was coded outside the valid Likert scale range of 1 to 5. Next, items Q3, Q4, and Q26—which are negatively phrased—were reverse-coded to align with the direction of positively worded items.

Scores for the four domains were computed using the following formulas:

- Physical Health = MEAN.6 (Q3, Q4, Q10, Q15, Q16, Q17, Q18) × 4
- Psychological Health = MEAN.5 (Q5, Q6, Q7, Q11, Q19, Q26) × 4
- Social Relationships = MEAN.2 (Q20, Q21, Q22) × 4
- Environment = MEAN.6 (Q8, Q9, Q12, Q13, Q14, Q23, Q24, Q25) × 4

Each domain score was multiplied by 4 to ensure comparability with the WHOQOL-100 scale. The notation "MEAN.n" indicates the minimum number of items (n) required to calculate a valid domain score. After obtaining the raw domain scores, they were transformed to a standardized 0–100 scale using the formula: (Domain Score − 4) × (100 / 16). An overall quality of life (QoL) score was also computed using this same transformation method, provided that at least 21 items had non-missing responses. A cutoff point of 60 was applied, where scores of 60 and above were classified as good QoL, and scores below 60 were classified as poor QoL.

The findings reveal that a significant majority of respondents rated their quality of life as poor across all measured domains. The psychological and physical health domains showed particularly low outcomes, with nearly two-thirds of participants falling into the poor category. The environment domain had slightly better outcomes compared to the others yet still reflected a substantial proportion reporting poor quality. Overall, less than one-third of respondents perceived their general quality of life as good, as shown in Table 4.8, highlighting broad challenges in well-being among the study population.

Table 4.8:: Good Quality of Life Across WHOQOL-BREF Domains

Variables	Values Numbers (%)
Good Physical health domain	133 (35.7%)
Psychological health domain	
Good	126 (33.7%)
Social relationships domain	
Good	141 (37.6%)
Environment domain	
Good	151 (40.3%)
Overall quality of life	
Good	109 (29.1%)

4.2.1 Association Between Availability, Accessibility, Acceptability, and Quality of Health Services with Quality of Life

To enable comparison with the QoL composite, four latent variables (availability, accessibility, acceptability, and quality) were created by computing a score for each of the different items used in the questionnaire to measure each latent variable and subsequently categorizing them using a cut-off of 60%. While computing the denominator (expected total score), consideration was made for missing values and different Likert scales. Binary logistic regression was used to determine factors associated with QoL at both the bivariable and multivariable levels. Only variables with a p-value of <0.2 were included in the multivariable logistic regression model.

Out of the individual and healthcare service-related factors assessed, household income and perceived quality of healthcare services showed the strongest associations with QoL outcomes among patients managing hypertension and diabetes. Patients with monthly incomes between KShs 30,000 and KShs 49,999 were nearly six times more likely to report good QoL compared to those earning less than KShs 10,000 (aOR = 5.92; 95% CI: 2.67–13.10). Similarly, those perceiving health services as “quality” had more than twice the odds of reporting good QoL (aOR = 2.23; 95% CI: 1.19–4.21) compared to those who did not. Notably, retired individuals were also more likely to report good QoL than full-time employees (aOR = 2.34; 95% CI: 1.01–5.43). These findings highlight the critical role of economic empowerment and perceived service quality in shaping health outcomes for individuals with chronic conditions in Mombasa County.

While other factors such as age, gender, marital status, education, and occupation were considered, they did not show statistically significant associations with quality of life in the adjusted model. Similarly, availability, accessibility, and acceptability of healthcare services, though associated with some trends, were not significant predictors in the multivariable analysis.

Table 4.9 presents the unadjusted (uOR) and adjusted (aOR) odds ratios for the various factors. The term “Ref” in the table denotes the reference category for each variable against which other categories are compared in the regression model. For example, for the variable *marital status*, "Married" serves as the reference category (Ref), and the odds of good QoL for other groups (e.g., single, divorced, widowed) are interpreted relative to that group. Similarly, for income, those earning less than KShs 10,000 form the reference category, with all other income brackets compared against it.

Table 4.9: Factors Associated with the Management of NCDs (Hypertension and Diabetes) and Their Impact on Quality of Life (WHOQOL-BREF).

	QoL		**uOR**	**aOR**
Variables	**Poor**	**Good**	**[95%CI]**	**[95%CI]**
Marital Status				
Married	163 (71.2%)	66 (28.8%)	Ref	
Single	40 (72.7%)	15 (27.3%)	0.93 [0.48-1.79]	
Divorced	41 (77.4%)	12 (22.6%)	0.72 [0.36-1.46]	
Widowed	22 (57.9%)	16 (42.1%)	1.80 [0.89-3.63]	
Education Level				
No formal education	27 (87.1%)	4 (12.9%)	Ref	Ref
Primary education	41 (68.3%)	19 (31.7%)	3.12 [0.96-10.21]	2.09 [0.61-7.21]
Secondary education	89 (67.9%)	42 (32.1%)	3.19 [1.05-9.69]	2.32 [0.73-7.41]
Higher education	108 (71.5%)	43 (28.5%)	2.69[0.89-8.14]	1.37 [0.4 - 4.50]
Occupation				

Employed (full-time)	68 (65.4%)	36 (34.6%)	Ref	Ref
Self-employed	79 (68.1%)	37 (31.9%)	0.88[0.50-1.55]	1.69[0.81-3.51]
Unemployed	65 (82.3%)	14 (17.7%)	0.41[0.20-0.82]	0.97[0.37-2.53]
Retired	36 (66.7%)	18 (33.3%)	0.94[0.47-1.89]	2.34[1.01-5.43]
Student	17 (81.0%)	4 (19.0%)	0.44[0.14-1.42]	1.06[0.28-3.97]
Household Income				
Less than KShs 10,000	160 (80.8%)	38 (19.2%)	Ref	Ref
KShs 10,000 - KShs 29,999	65 (66.3%)	33 (33.7%)	2.14[1.24-3.70]	2.01 [1.04-3.88]
KShs 30,000 - KShs 49,999	34 (50.0%)	34 (50.0%)	4.21[2.33-7.61]	5.92 [2.67-13.10]
KShs 50,000 - KShs 99,999	7 (63.6%)	4 (36.4%)	2.41[0.67-8.64]	3.76 [0.91-15.55]
Residential Area				
Urban	88 (65.7%)	46 (34.3%)	Ref	
Suburban	111 (74.0%)	39 (26.0%)	0.67[0.40-1.12]	
Rural	65 (73.0%)	24 (27.0%)	0.71[0.39-1.27]	
Availability				
Not available	67 (76.1%)	21 (23.9%)	Ref	
Available	199 (69.3%)	88 (30.7%)	1.41[0.81-2.45]	
Accessibility				
Not accessible	92 (76.7%)	28 (23.3%)	Ref	Ref
Accessible	174 (68.2%)	81 (31.8%)	1.53[0.93-2.52]	1.11[0.64-1.93]
Acceptability				
Not acceptable	122 (72.6%)	46 (27.4%)	Ref	
Acceptable	144 (69.6%)	63 (30.4%)	1.16[0.74-1.82]	
Quality				
Not quality	73 (80.2%)	18 (19.8%)	Ref	Ref
Quality	193 (68.0%)	91 (32.0%)	1.91[1.08-3.39]	2.23[1.19-4.21]

CHAPTER 5

5.1 Introduction

This chapter interprets the key findings from the study, examining how the perceived availability, accessibility, acceptability, and quality (AAAQ) of healthcare services affect the management of non-communicable diseases (NCDs), specifically hypertension and diabetes, and their impact on quality of life (QoL) among patients in Mombasa County. The discussion is organized around the research objectives, supported by relevant literature, and concludes with a reflection on strengths and limitations. These results must be viewed within the established context of NCDs as a significant and growing public health concern globally and in Kenya (WHO, 2022; MCHR, 2018).

The wide age range of participants (18–81 years), with a median age of 45 years, suggests that NCDs such as hypertension and diabetes affect both younger and older adults. This finding indicates that NCDs are not confined to older populations, as traditionally perceived, but are becoming prevalent even among younger, economically active groups. This is consistent with the increasing recognition of NCDs as a threat to economic development and productivity, particularly in low- and middle-income countries, as discussed previously (Onyango, 2018). The shift in disease burden toward younger populations underscores the need for early screening and preventive strategies, as emphasized in the WHO's Global Action Plan for NCDs (WHO, 2023). This shift reinforces the need for early screening, health education, and preventive strategies starting from a younger age. The high comorbidity of hypertension and diabetes observed in a third of the participants underscores the urgent need for integrated care models, which have proven effective in other settings by layering services to leverage existing healthcare frameworks (Osetiskty, 2020). Patients with comorbidities require tailored interventions that address not just clinical care but also self-management support and coordinated follow-up. The findings reinforce the need for healthcare systems to adopt holistic management approaches, as suggested by the Systems Theory framework (Anderson, 2016).

The nearly equal gender distribution within the sample enhances the ability to analyze gender-related differences in perceptions and access to care, aligning with the need for interventions designed with gender responsiveness in mind. As noted in the literature, socio-demographic factors like gender can exacerbate the susceptibility to NCDs (Tawa, 2011). The study population's diversity in employment status and the prevalence of low monthly incomes underscore the considerable economic vulnerability of NCD patients, emphasizing the importance of financial protection mechanisms as highlighted in prior reports (Toebes, 2017; Mwai, 2016).

The majority of participants were married, which may indicate stronger social support systems. This is consistent with the Health Belief Model (HBM) discussed in Chapter 2, which identifies social support as a key factor influencing health behaviors and treatment adherence (Green, 2020). However, the presence of single, divorced, and widowed participants highlights the need for targeted support for vulnerable groups, as emphasized in the literature on social determinants of health (Chelak, 2023).

The relatively high levels of education among participants suggest potential for better health literacy, which is critical for self-management of chronic conditions. This aligns with Muscat (2021), who identified health literacy as a key facilitator of patient engagement. However, the persistence of low health literacy among some participants highlights the ongoing need for simplified health communication, as recommended by Caballero (2023). The relatively high levels of secondary and higher education among participants suggest a potential for stronger health literacy, which can facilitate better understanding of diagnoses, treatment plans, and lifestyle modifications. However, the presence of a significant minority with low or no formal education necessitates the development of simplified, accessible health communication materials and tailored education to ensure no group is left behind in NCD management.

The economic vulnerability of participants, over half earning less than KShs 10,000 per month reflects Muriithi's findings on the financial burden posed by NCDs in Kenya (Muriithi, 2016).This reinforces the call for policy reforms, such as expanded insurance coverage and subsidies, to improve affordability, as highlighted in the frameworks and legal mandates section (Exworthy, 2011).The diversity in employment status, with a notable number unemployed or retired and the finding that over half earn less than KShs 10,000 monthly, point to considerable economic vulnerability. This has direct implications for the affordability of care, especially in a context where out-of-pocket payments are still significant. It emphasizes the importance of financial protection mechanisms, such as offering subsidized care for low-income groups and exploring alternative models to reduce the financial burden of chronic disease management.

The residential distribution (urban, suburban, rural) mirrors the geographic disparities in healthcare access, as discussed earlier. Rural participants faced greater barriers, which is consistent with the accessibility challenges highlighted in the empirical review (Sherman, 2018). This further supports the need for decentralized care models, as outlined in the Kenya Universal Health Coverage framework (MOH, 2021). The residential spread offers an opportunity to examine how location affects access to healthcare. Rural residents may face more significant barriers, including distance to facilities, poor road infrastructure, and limited availability of specialists or diagnostics. This reinforces the need for decentralized care models and mobile outreach programs to bridge service gaps, especially for NCD patients in underserved areas. The sociodemographic findings collectively highlight the complexity and diversity of the NCD-affected population. A “one-size-fits-all” approach is unlikely to be effective. Instead, targeted, context-sensitive strategies are needed, those that recognize the intersectionality of age, gender, socioeconomic status, geography, and comorbidity in shaping health experiences and outcomes.

5.2 Interpretation of Key Findings by Domain

5.2.1 Availability of Healthcare Resources

The findings revealed significant inconsistencies in the availability of healthcare resources, including medications, diagnostic services, and specialists. These gaps align with the findings where Ammoun (2022) noted similar issues in Kenya's healthcare system. The variability in staffing levels observed in this study is consistent with the Systems Theory perspective, which emphasizes systemic inefficiencies in resource allocation (Anderson, 2016). This aligns with the empirical evidence from Ammoun (2022), who highlighted that healthcare readiness varied significantly across regions and settings in Kenya, with critical gaps in essential trained personnel and national guidelines for managing NCDs.

The availability of healthcare workforce emerged as a mixed experience in the study. While some participants consistently perceived staffing levels as adequate, a larger portion only sometimes felt this was the case. More than one-fifth of respondents indicated a general lack of sufficient personnel. These patterns reflect underlying issues such as structural staffing shortages, inefficient workforce distribution, and irregular scheduling practices. This is consistent with findings by Caroline (2018), who highlighted similar challenges in the availability of health workers in low- and middle-income countries (LMICs), including Kenya.

Staffing shortages, delays in deployment, and migration to the private sector have been identified as major barriers to adequate healthcare provision. The study by Ammoun (2022) also noted that workforce availability varies significantly across urban and rural settings, which could further explain the discrepancies observed in Mombasa County.

Similarly, the supply of essential medications showed considerable variability. Less than one-quarter of respondents reported that medications were always available, while the majority experienced inconsistent access. These findings resonate with Ngaruiya et al. (2021), who found that stockouts were a frequent issue in Kenya's healthcare system, particularly in public facilities. The fragility of the supply chain contributes to inadequate medication availability, which, in turn, negatively affects patient outcomes. Consistent stockouts, as seen in this study, limit access to essential drugs, which compromises treatment adherence and contributes to disease progression. Moreover, patients may be forced to seek costly alternatives in the private sector, increasing their financial burden, as seen in other studies (Sherman, 2018).

Access to diagnostic services also presented challenges. Only about one-quarter of participants reported consistently obtaining the necessary tests, while many experienced occasional or frequent difficulties. This limited access to diagnostic services hinders early detection and continuous monitoring, both crucial for the management of chronic diseases like hypertension and diabetes (Sherman, 2018). This finding is consistent with the empirical evidence from studies on NCD care in Kenya, where inadequate diagnostic services often lead to delayed diagnoses and poor health outcomes (Ammoun, 2022).

The availability of specialist care was also found to be suboptimal. While some respondents had consistent access to specialists, nearly 40% reported only occasional or rare opportunities to see one. This is particularly concerning in settings like Mombasa County, where specialists are often concentrated in higher-tier facilities. The findings align with the study by Sherman (2018), which highlighted the lack of specialist services in Mombasa and noted that patients often had to rely on general practitioners, which compromised the quality of care and led to misdiagnoses. Such barriers are compounded in rural and suburban areas, where transport and referral pathways remain underdeveloped.

Although most participants perceived healthcare as "somewhat available," this did not consistently translate into good quality-of-life (QoL) outcomes. This disconnect between perceived availability and functional adequacy mirrors the observations of Duggirala and

Rajesh (2023), who noted that perceived availability does not always equate to effective care or patient satisfaction. The findings of this study suggest that while healthcare services are present, they are often fragmented, unreliable, and inadequate in meeting the needs of patients, particularly those with NCDs.

Overall, these findings point to a healthcare system that, while operational, is fragmented and inconsistent in delivering reliable and comprehensive care. The perception of adequacy reported by some respondents should be interpreted cautiously, as it may reflect lowered expectations or resignation to a system that has consistently underperformed. These patterns are not unique to Mombasa County or Kenya but reflect broader challenges faced by low- and middle-income countries, where infrastructure deficits, supply limitations, and workforce shortages hinder effective NCD management (Caroline, 2018; Ammoun, 2022). The specific contextual realities of Mombasa County, including its diverse geography, population density, and socio-economic disparities, add unique complexity to the local healthcare experience. Therefore, tailored, systemic reforms are urgently needed to address these challenges and improve healthcare delivery.

5.2.2 Accessibility of Healthcare Resources

The findings from this study reveal a complex and multifaceted picture of healthcare accessibility among individuals living with NCDs in Mombasa County. While most respondents (68%) perceived healthcare services as generally accessible, a deeper analysis of the data uncovers significant barriers that continue to undermine equitable access and, by extension, affect quality-of-life outcomes. This aligns with Exworthy's (2011) definition of accessibility, which emphasizes obtaining healthcare services without facing barriers.

One of the most pressing barriers identified was financial strain. A substantial portion of respondents reported that transportation costs significantly impacted their ability to seek healthcare, with over half either agreeing or strongly agreeing that these costs posed a burden. Only 18.7% had complete insurance coverage, while the rest had either partial or no support at all. This financial vulnerability was further evidenced by coping strategies such as relying on personal savings (33.4%) or family support (32.1%), while others took loans or turned to community resources. Alarmingly, some patients delayed or entirely avoided seeking care due to cost, highlighting a crucial link between affordability and care utilization. Financial strain emerged as a critical barrier, with many participants unable to afford transport or treatment costs aligning with Murithii (2016)which highlighted the economic burden of NCDs (Muriithi, 2016) and emphasizes the need for financial protection mechanisms, such as the National Hospital Insurance Fund (NHIF) reforms discussed by (Moses, 2021). Toebes (2017) also noted that NCDs can lead to financial strain, especially in LMICs.

These economic challenges have direct and adverse consequences on health outcomes. The study found that nearly 60% of respondents had skipped or stopped treatment at some point due to cost, and over a third reported experiencing negative health outcomes as a result, which confirms that a low socioeconomic status can influence outcomes (Sherman, 2018). These statistics are critical to understanding the lived experiences of people managing chronic illnesses, where consistent access to care and medications is vital. This highlights the importance of addressing out-of-pocket payments, as highlighted by the Institute of Economic Affairs (2024). In a context like Mombasa County, where a significant portion of the population lives under the poverty line, the cost of ongoing disease management becomes a profound barrier to achieving optimal health.

Geographic barriers were also prominent, particularly for rural residents. This is consistent with the empirical review in Chapter 2, where Sherman (2018) identified distance as a key obstacle to care. As a solution to the challenges of distant geographic barriers, the findings underscore the importance of mobile health technologies, as suggested by Kiragu (2021) study on mHealth interventions.

Communication and inclusivity also emerged as vital aspects of accessibility. While some respondents reported satisfaction with healthcare provider interactions, a notable number felt misunderstood or that their concerns were not adequately heard. About a quarter of the participants rated communication as poor or very poor, and nearly a third felt neutral or dissatisfied with how their providers involved them in care decisions. These breakdowns in communication can lead to frustration, disengagement, and poor adherence to treatment.

In addition to communication issues, the study found challenges related to health information comprehension. While some participants understood their diagnosis and treatment plans well, a significant number found this information difficult to understand. This emphasizes a significant degree of low health literacy as a barrier to effective self-management, which aligns with the study presented in Mombasa (Kheir, 2023). Also, a significant point to note is that with the increase of technology in access to health information, a large population is digitally fluent (Helsper, 2021).

Taken together, these findings emphasize that accessibility is not merely about proximity to health services; rather, it is a multidimensional concept that includes financial affordability, geographic reachability, cultural and linguistic inclusivity, and the clarity of health information provided. The implications for quality of life are profound. When patients face financial strain, long travel distances, poor communication, or lack of understanding, they are less likely to adhere to treatment plans, attend follow-up appointments, or engage in preventive behaviors leading to deteriorating health outcomes and diminished quality of life.

In the context of this study, the findings are particularly important. They demonstrate that even when services are nominally available, access is not guaranteed for all. Economic vulnerability, rural residency, and poor communication collectively contribute to disparities in how care is experienced and utilized. These barriers directly undermine the ability of patients to manage chronic conditions effectively, ultimately compromising their physical, psychological, and social well-being. The dual public-private framework for providing healthcare services should be considered, as it does create equity concerns since the public sector frequently lacks resources to support all communities (Mohamoud and Mash, 2020).

Therefore, improving accessibility must go beyond infrastructure and encompass comprehensive health system reforms, including subsidized care for low-income patients, decentralization of services to community health centers, improved health education initiatives, and the integration of digital tools to support patient engagement. Without addressing these barriers holistically, progress in NCD control and improvements in patient quality of life will remain slow and uneven across Kenya’s diverse populations.

5.2.3 Acceptability of Healthcare Resources

The concept of acceptability in healthcare delivery encompasses how well services align with patients' cultural beliefs, expectations, communication needs, and levels of trust in providers. In this study, slightly more than half of the respondents (55.2%) considered healthcare services acceptable overall. However, a closer look at the data reveals a more complex and nuanced picture. Beneath the surface-level perception of acceptability lie significant challenges that directly influence the patient experience and, by extension, the quality-of-life outcomes for individuals managing NCDs.

One of the most striking findings was that over two-thirds of participants (66.6%) viewed understanding the healthcare provider’s cultural background as either important or very important. This underscores the central role that cultural sensitivity plays in shaping healthcare interactions, particularly in a diverse and multicultural setting like Mombasa County, where religion, ethnicity, and traditional practices significantly inform health beliefs and behaviors. Despite this strong preference for culturally competent care, 40% of participants reported that their providers were culturally insensitive, and many others described their cultural beliefs as only partially acknowledged. These findings support the empirical evidence showing a mismatch between patient expectations and provider behavior, particularly in settings where cultural diversity is pronounced. This disconnect not only highlights the gap between patients' needs and the services provided but also signals potential barriers to building trust, which is essential for effective NCD management.

The lack of cultural sensitivity and respect for beliefs is a key factor influencing patient engagement, trust, and ultimately, health outcomes. The data from this study aligns with findings from previous studies in low- and middle-income countries, which emphasize how cultural mismatches between patients and healthcare providers can contribute to poor service utilization and low satisfaction (Mwangi et al., 2019; WHO, 2020).

Language and cultural barriers were also reported frequently, with more than half (57.1%) of participants experiencing such challenges “often” or “sometimes.” These barriers not only complicate communication but also reduce patients' ability to understand diagnoses, medication regimens, and treatment plans. This reduced comprehension can negatively impact adherence and patient engagement, as seen in the high rates of non-adherence reported in this study. These findings echo those from Sherman (2018), who highlighted that communication barriers can significantly hinder the management of chronic conditions like hypertension and diabetes. Moreover, nearly half (48.8%) of the respondents believed their cultural beliefs had no impact on treatment adherence, and a quarter were unsure. This may indicate a lack of awareness regarding how cultural norms, such as stigma or reliance on traditional healing methods, influence health behaviors.

Trust in healthcare providers emerged as a significant concern, with only 16% of respondents reporting complete trust in their providers' ability to deliver effective care. A majority (61.5%) expressed only partial or moderate trust. Low trust can stem from previous experiences of disrespect, exclusion from decision-making, or discriminatory treatment. In the context of NCD management, where long-term engagement with healthcare providers is essential, low trust may result in poor medication adherence, missed appointments, or disengagement from the healthcare system. This finding mirrors existing literature, where low trust in healthcare providers is consistently cited as a barrier to quality care and effective disease management (Mwangi et al., 2019; Sherman, 2018).

Additionally, the data indicated that many participants did not view healthcare services as being tailored to their community's needs. Only 15% believed services were "very well" adapted, while over a quarter felt they were "not much" or "not at all" aligned with community expectations. These findings suggest that many respondents viewed health services as generic and impersonal. This perception could be detrimental to individuals with NCDs, whose care often intersects with psychosocial, cultural, and familial factors requiring more personalized, people-centred approaches. The lack of culturally tailored services and the perception of care being impersonal may further exacerbate the challenges of managing chronic conditions in Mombasa County.

These findings are crucial to the central objective of this study: to explore how perceptions of health service delivery influence quality-of-life outcomes in . Acceptability, unlike the more structural aspects of availability or accessibility, touches on the relational and cultural dimensions of care. It reflects how "seen," "heard," and "respected" patients feel in their interactions with the healthcare system. These perceptions directly shape patient behaviors, influencing whether individuals continue treatment, follow medical advice, or return for follow-up appointments.

When patients perceive their care as culturally insensitive, poorly communicated, or dismissive of their values, they are more likely to disengage. This may manifest as skipped appointments, poor medication adherence, or even a preference for traditional or informal care systems. Over time, this disengagement contributes to worsening health outcomes and declining quality of life. In line with previous studies, this study emphasizes that improving the acceptability of healthcare services is essential for better NCD management and quality-of-life outcomes (Mwangi et al., 2019; WHO, 2020).

In Mombasa County, a region marked by considerable cultural and linguistic diversity, the lack of culturally tailored services and limited trust in providers reflect a missed opportunity to improve healthcare outcomes through better patient engagement. Addressing these gaps will require integrating cultural competence training into health worker curricula, improving communication skills, and strengthening community involvement in healthcare planning. Such interventions could help bridge the divide between providers and patients, leading to more inclusive, respectful, and ultimately more effective care, which would improve both health outcomes and quality of life for individuals managing NCDs.

5.2.4 Quality of Healthcare Resources

Quality of care plays a pivotal role in shaping patient outcomes, particularly in the management of chronic conditions like hypertension and diabetes. The findings from this study reveal a nuanced picture of patient perceptions regarding healthcare quality, reflecting both strengths and significant gaps in service delivery. While a majority of respondents (75.7%) generally rated healthcare services as good, a closer look reveals several critical areas that require attention to improve patient experiences and, by extension, health outcomes.

One of the key findings was the moderate confidence patients had in the competence of their healthcare providers. Only 14.2% of respondents reported being "very confident" in the providers' abilities, while 22% expressed low confidence. This aligns with Mbuthi's study (2013), which identified gaps in healthcare service quality due to factors such as inadequate training, insufficient support from management, and poor communication practices. The lack of trust in provider competence can significantly impact patient engagement and adherence to treatment plans. Inadequate provider competence, particularly in the context of managing chronic conditions, can undermine patient trust and affect the continuity of care, which is vital for individuals living with non-communicable diseases (NCDs).

The study also highlighted concerns about provider communication, with less than half of respondents rating communication skills as “excellent” or “good.” This is consistent with Sherman’s (2018) findings, which indicated that poor communication is a barrier to effective healthcare delivery. Inadequate communication can result in patients feeling misunderstood, which can lead to disengagement, poor medication adherence, and worsening health outcomes. Poor communication practices, such as the inability to effectively explain diagnoses, treatment options, and lifestyle recommendations, are often cited as barriers to quality care, especially in NCD management, where understanding the treatment plan is crucial for patient adherence.

Another critical area of concern was the lack of patient involvement in decision-making. Only 17.4% of respondents felt that their providers “very well” involved them in decisions about their care. This gap in patient-centered care, where patients feel excluded from their care decisions, can lead to lower treatment adherence. A study by Sherman (2018) also indicated that patients who are not involved in decisions about their treatment often feel disconnected from their care process, which can negatively affect their motivation to follow prescribed treatment regimens. The lack of shared decision-making can also exacerbate feelings of being overlooked or marginalized in the healthcare system, particularly for patients from diverse cultural backgrounds who may have specific preferences and expectations for their care (Sherman, 2018).

Timeliness of care was another significant issue in this study, with many respondents reporting long waiting times and frequent delays in scheduling appointments. Nearly 39% of participants experienced difficulties scheduling appointments, and 40% reported frequent delays. This issue resonates with the findings of Mbuthi (2013), where delays in care and long wait times were identified as persistent challenges in public healthcare facilities. These delays are especially problematic for NCD patients, as timely diagnosis, consistent monitoring, and adjustments to treatment regimens are crucial for managing chronic conditions effectively. Long wait times can disrupt the continuity of care, leading to missed opportunities for early intervention, which is critical for preventing complications in NCD management.

Perceived safety and effectiveness of care also varied significantly among respondents. While some participants rated healthcare services as "safe" or "very safe," nearly 27% viewed them as unsafe. This finding is consistent with the concerns raised by Sherman (2018) regarding the safety of healthcare services, particularly in facilities lacking adequate resources, equipment, and trained personnel. Safety concerns, including the risk of poor surgical outcomes and inadequate equipment, can erode patient trust in healthcare providers and discourage continued engagement with the healthcare system.

Lastly, overall satisfaction with healthcare providers was moderate, with only 16.4% of respondents reporting being “very satisfied” and 28.5% remaining neutral. These findings align with those of Mbuthi (2013), who noted that patient satisfaction with healthcare services in

Mombasa County was often influenced by factors such as poor communication, inadequate staff training, and lack of resources. Dissatisfaction among patients, particularly those managing chronic conditions, can lead to disengagement and a preference for alternative healthcare options, including traditional or informal systems.

5.3 Perceived Importance of Availability, Accessibility, Acceptability, and Quality in Healthcare

The four pillars of healthcare service delivery, availability, accessibility, acceptability, and quality are central to the experience and outcomes of individuals seeking care, especially for chronic conditions such as hypertension and diabetes. In this study, all four dimensions were recognized as important to varying extents; however, when asked to identify the most critical factor in their healthcare experience, a clear preference for availability and accessibility emerged among participants. Specifically, 38.0% ranked availability as the most important, followed closely by accessibility at 34.5%. In contrast, fewer respondents prioritized acceptability (13.9%) or quality (13.6%) as their top concern.

These findings highlight a pragmatic perspective among patients when navigating a system constrained by resource limitations and operational inefficiencies, Individuals appear to prioritize whether they can reach a facility and whether services are present over whether those services are culturally sensitive or of high technical quality. This preference suggests that basic access remains a foundational need, and unless it is reliably met, other dimensions of care may be perceived as secondary. For individuals managing chronic diseases, the consequences of unavailability, such as missed medication refills, delayed diagnostics, or inability to see a specialist, can be severe, making the presence of services a pressing priority.

Although acceptability and quality were not ranked as the highest priorities, they were still deemed important by most participants. Nearly 55% of respondents rated acceptability as "important" or "very important," and a similar percentage did so for quality. This indicates that while patients may not always place these dimensions first, they are still valued and likely influence patient satisfaction, trust in providers, and treatment adherence. The lower prioritization may also reflect adjusted expectations within the public healthcare system, patients may have become accustomed to navigating impersonal or inconsistent care, thus reserving their strongest preferences for aspects they perceive as most critical to accessing any care at all.

This data was particularly important as it provides insight into patient priorities, which can guide health system strengthening efforts. Understanding which aspects of care patients value most can help policymakers and healthcare managers design responsive and patient-centred interventions. For example, investment in outreach programs, improved facility staffing, or mobile clinics may address availability and accessibility gaps, while efforts to train staff in communication and cultural competence may enhance acceptability and trust.

The findings also support the broader objective of this study exploring how perceptions of service delivery influence quality-of-life outcomes. If individuals consistently struggle with basic access, they may experience higher levels of stress, reduced self-efficacy in managing chronic illness, and ultimately, poorer physical and psychological well-being. Conversely, improving availability and accessibility may serve as key enablers of more consistent care engagement and, over time, better disease control and improved quality of life.

These patterns are consistent with other studies in resource-limited settings. In many low- and middle-income countries, availability and accessibility remain the greatest barriers to equitable care. For example, findings from a study by Ouma et al. (2020) in rural Kenya revealed that patients prioritized proximity and service availability over clinical quality due to the immediate challenges of reaching care. Similarly, the World Health Organization notes that addressing geographic and financial access is often the first step toward improving broader health system performance (WHO,2022).

In Mombasa County, where public health facilities often face workforce shortages, supply interruptions, and high patient volumes, it is unsurprising that patients focus first on the existence and accessibility of services. Nevertheless, long-term health improvements require parallel efforts to improve service quality and ensure that care is both respectful and effective.

5.4 Relationship Between Healthcare Dimensions and Quality of Life

The cross-tabulation analysis offers valuable insight into the relationship between perceptions of health service delivery and reported quality of life (QoL) among patients living with hypertension, diabetes, or both conditions. The consistent trend across all three patient groups reveals that individuals who perceived healthcare services as available, accessible, acceptable, and of high quality were more likely to report better quality of life outcomes. Conversely, those who rated these healthcare dimensions poorly were more likely to report a lower quality of life, reinforcing the central premise of this study that the nature of health service delivery significantly influences patient well-being in chronic disease contexts.

Across all strata, quality of healthcare stood out as having the strongest positive association with good QoL. For example, among patients with hypertension only, 89.7% of those who rated the care they received as “quality” also reported good quality of life. Similarly, in the diabetes-only and comorbid groups, quality of care consistently aligned with better QoL ratings. This underscores the pivotal role that perceived service quality including provider competence, effective communication, and safe, reliable care plays in shaping chronic disease management experiences. It suggests that even in resource-limited settings, when care is delivered with consistency, professionalism, and empathy, it can significantly enhance patients’ physical and psychological well-being.

Availability and accessibility also demonstrated strong associations with better quality of life across all groups. In all three strata, a greater proportion of participants who viewed services as "available" and "accessible" also reported good QoL. This finding reinforces earlier observations in the study that the ability to reach and utilize health services is foundational patients must first be able to get to a facility and find essential services available before they can benefit from those services. The consistency of this pattern across disease categories reflects the universal need for continuity and physical access in managing long-term conditions.

The dimension of acceptability, however, showed more variability. In the diabetes-only group, for instance, a higher proportion of respondents who perceived services as culturally acceptable reported good QoL (66.7%), compared to only 33.3% among those who did not. In contrast, among those with both conditions, the difference in QoL between those who found care acceptable versus not was less pronounced. This variability may reflect different sensitivities to cultural alignment, possibly due to differing care demands or expectations between the groups. Nonetheless, the results suggest that culturally respectful, inclusive care remains a relevant factor in patient experience, even if it is sometimes outweighed by structural concerns like availability and quality.

These findings were important as they enabled the study to go beyond individual-level perceptions and examine how service delivery interacts with health outcomes across disease subtypes. The cross-tabulation approach allowed for a nuanced analysis of patterns and interdependencies between healthcare dimensions and quality of life. It also provided evidence that patient-centred service delivery is not just desirable, it is tangibly linked to better lived outcomes among individuals with chronic illnesses.

The findings resonate with existing global and regional literature emphasizing that health systems performance is closely linked to patient experience and outcomes. Studies from similar low- and middle-income contexts have shown that when patients perceive care as reliable, respectful, and accessible, they are more likely to adhere to treatment plans, attend follow-ups, and manage their conditions effectively (WHO, 2020; Atun et al., 2015). In the Kenyan context, these associations gain even more significance given the structural and systemic challenges facing public healthcare, including limited staff, medicine stockouts, and infrastructural disparities. The data from Mombasa County affirm that positive perceptions of health service delivery correlate with better outcomes, making patient perceptions a powerful metric for evaluating system performance.

Furthermore, these results offer critical insight into chronic disease management in real-world settings. NCDs require ongoing engagement with the health system, and when care is fragmented, impersonal, or inconsistent, patients may become discouraged, leading to disengagement and worsened health. Conversely, when patients feel supported and trust the quality of their care, they are more empowered to manage their conditions and report better psychosocial well-being.

5.4 Strengths and Limitations

One of the key strengths of this study is the combined use of the AAAQ framework (Availability, Accessibility, Acceptability, and Quality) and the WHOQOL-BREF tool, which enabled a comprehensive and multidimensional assessment of healthcare service delivery and its impact on quality of life among individuals living with non-communicable diseases (NCDs). This dual-framework approach facilitated a nuanced examination of how systemic factors influence individual health outcomes beyond traditional clinical indicators. The AAAQ framework provided a structured evaluation of both the structural and experiential aspects of healthcare, while the WHOQOL-BREF offered a holistic perspective on the physical, psychological, social, and environmental domains of quality of life.

The study was conducted at a Level 5 public referral hospital serving a diverse patient population from urban, suburban, and rural areas within Mombasa County and beyond. This setting enhanced the socioeconomic, medical, and geographic diversity of participants, thereby increasing the relevance of the findings to a wide cross-section of individuals affected by NCDs. Consequently, the results offer valuable insights into the healthcare experiences of many Kenyans relying on public sector services.

Despite its contributions, the study has limitations. Chief among these is the reliance on self-reported data, which may be subject to recall bias, social desirability bias, or misinterpretation of questions. Participants may have inadvertently provided responses that do not accurately represent their experiences, particularly in sensitive areas such as healthcare satisfaction, discrimination, or treatment adherence. Furthermore, the cross-sectional design restricts causal inferences. While associations between perceptions of healthcare and quality of life are evident, the directionality remains unclear. Poorer quality of life may influence negative perceptions of healthcare services, or conversely, negative healthcare experiences contribute to diminished quality of life. The single-time-point data collection precludes the determination of cause and effect.

Finally, the generalizability of the findings is limited by the study's setting within a single public-sector facility in Mombasa County. These findings may not reflect the experiences of patients attending private facilities or those in other regions with different health system structures and resources. Therefore, caution is warranted in extending these results to the broader Kenyan population or to patients outside the public healthcare system.

CHAPTER 6

6.1 Introduction

This chapter concludes the key findings of the study and provides tiered recommendations on the way forward.

6.2 Conclusion

This study explored the perceptions and experiences of patients with hypertension and diabetes regarding healthcare service delivery in Mombasa County. Guided by the AAAQ framework (Availability, Accessibility, Acceptability, and Quality) and the WHOQOL-BREF tool, the study investigated how perceptions of service delivery shape disease management and quality of life outcomes.

Patients with hypertension and diabetes in Mombasa perceived healthcare service delivery as fragmented, inconsistent, and at times misaligned with their needs. These perceptions significantly affected their ability and willingness to manage their conditions. For many, gaps in healthcare delivery created a sense of frustration and distrust. Patients emphasized that when services were unreliable or culturally insensitive, they were less likely to adhere to treatment or seek timely care. The way patients viewed their care—particularly around communication, provider empathy, and service efficiency—directly influenced their experience of illness, emotional well-being, and motivation to engage in ongoing management of their conditions.

In terms of availability, patients reported that while healthcare facilities were physically present, the consistent availability of essential medicines, diagnostics, and specialized personnel was lacking. This unpredictability often led to treatment delays or interruptions. For patients, availability was deeply relevant to their care—it determined whether they could get the medications or services needed to maintain stable blood pressure or blood glucose levels. When availability was perceived as inadequate, patients expressed anxiety and a loss of control over their health.

Accessibility was another key concern. Patients struggled with transport costs, long travel distances, and the financial burden of out-of-pocket payments for medications and diagnostics. Those living in rural areas faced the most barriers. For them, accessibility was not just about reaching a facility—it was about affording the journey, navigating appointment systems, and covering the costs of continuous care. The perceived inaccessibility of services often discouraged regular follow-ups and undermined long-term disease control efforts.

The study also found that acceptability played a crucial role in shaping healthcare experiences. Many patients felt that healthcare workers lacked cultural competence, did not listen actively, or failed to involve them in decision-making. These factors contributed to feelings of disrespect and alienation. For patients managing chronic diseases, such perceptions impacted their willingness to return for care or follow medical advice. Acceptability, therefore, was not just a matter of patient preference—it was foundational to building trust and ensuring adherence.

Finally, perceptions of quality were influenced by a combination of provider skills, timeliness of service, communication, and clinical outcomes. Patients were more likely to perceive care as poor when they experienced long wait times, inadequate explanations of their condition, or ineffective treatments. These quality gaps translated into reduced confidence in the health system and poorer management of hypertension and diabetes. In this study, perceived quality was not an abstract metric—it shaped daily health choices, emotional health, and social functioning.

Collectively, these findings show that patient perceptions—rooted in their daily interactions with the healthcare system—play a powerful role in shaping how effectively they manage chronic illnesses and the quality of life they experience. Addressing these perceptions through patient-centred service delivery improvements can meaningfully enhance both care outcomes and system performance.

6.3 Recommendations

6.3.1 Policy Implications

The study underscores several critical areas where policy reforms are necessary to improve healthcare access and quality for individuals with NCDs in Mombasa County. Equitable resource allocation is essential, as disparities in the availability of medications, diagnostic tools, and healthcare personnel across different facilities call for national and county policies that ensure the equitable distribution of healthcare resources. This is particularly urgent in underserved areas, such as rural and peri-urban regions of Mombasa, where access to essential healthcare services remains limited. Second, strengthening supply chain management is a priority, as frequent stockouts of medications and irregular access to diagnostic services highlight the need for robust supply chain systems. Policy reforms should focus on strengthening procurement, forecasting, and distribution infrastructure, ensuring that NCD-related supplies are treated with the same urgency as infectious disease commodities. Investment in human resources for health is necessary to address staffing gaps in public healthcare facilities.

Targeted policies for recruitment, training, and deployment, along with retention strategies, will ensure skilled health workers are available, particularly in rural or high-volume healthcare settings. Financial protection mechanisms are crucial, as the financial burden on patients due to transport costs and out-of-pocket payments necessitates the expansion of Universal Health Coverage benefit packages to fully cover NCD management. Policymakers must prioritize subsidized care for low-income populations and eliminate indirect costs, such as transport and diagnostic fees, which disproportionately affect the poor. Furthermore, geographic equity in service provision must be addressed, as the unequal access to healthcare services between urban and rural areas calls for the decentralization of NCD services. Policies should promote investment in lower-tier healthcare facilities and ensure the availability of essential NCD services, including diagnostics and follow-up care, in rural areas. The integration of mobile health into the national strategy is recommended, given the positive reception of digital health tools among patients. Policies should support the integration and scale-up of mobile health platforms, which can provide essential services such as education, reminders, teleconsultations, and follow-up care, particularly in remote or hard-to-reach areas.

6.3.2 Practice Implications

The findings of this study suggest several practice-oriented strategies to improve healthcare service delivery for NCD patients, with a focus on reducing access barriers and enhancing patient care. One key strategy is the decentralization of NCD services, as limited access to specialists and diagnostic services in peripheral areas underscores the need to integrate NCD care into lower-tier facilities. This integration would help reduce patient load on referral hospitals and bring services closer to communities, improving access and efficiency in care delivery. Another effective approach is task-shifting and team-based care models. Given the personnel shortages, healthcare facilities could benefit from task-shifting strategies, where non-physician health workers take on roles such as routine screening, health education, and follow-up care for stable NCD patients. This would ensure that care remains accessible and efficient. Additionally, patient-centred operational reforms are necessary, as the observed mismatch between perceived availability and the actual functional adequacy of services calls for improvements in service organization.

Enhancing scheduling systems, referral coordination, and triaging models would streamline patient flow, reduce wait times, and improve overall care efficiency. Strengthening health education and communication is another priority, as gaps in the delivery and understanding of health information suggest the need for healthcare providers to receive training in patient-centred communication. This training should focus on simplifying medical information, ensuring patient understanding, and culturally tailoring messages, while healthcare facilities should also develop standardized educational materials to improve health literacy. Improving inclusivity in service delivery is equally important, as reports of patients feeling misunderstood or not listened to highlight the need for healthcare providers to prioritize active listening, cultural sensitivity, and shared decision-making, particularly in chronic care settings where long-term trust and cooperation are crucial. Routine screening for access barriers should be implemented in healthcare facilities to identify patients facing challenges such as financial difficulties, transportation issues, or lack of information. Connecting these patients to community health volunteers or social welfare programs can help mitigate these barriers and improve access to care.

6.3.3 Theoretical and Research Implications

The findings of this study have significant implications for future research on healthcare service delivery and NCD management. One key area is the need for contextualized quality metrics, as the discrepancy between perceived availability and quality-of-life outcomes suggests that health system performance assessments should move beyond structural measures of availability. Future research could benefit from longitudinal studies that track how patients' perceptions of healthcare service delivery change over time and examine how these shifts influence treatment adherence and quality of life outcomes. Such designs would provide clearer insights into causal relationships that cross-sectional studies are unable to determine.

Interventional studies focused on the AAAQ dimensions—availability, accessibility, acceptability, and quality—could evaluate the impact of targeted improvements within healthcare settings. These studies would assess how enhancing specific aspects of service delivery affects patient satisfaction, adherence to treatment, and overall health outcomes, particularly among individuals living with non-communicable diseases.

In-depth qualitative research, including interviews and focus group discussions, would offer rich, detailed understanding of the lived experiences of patients with hypertension and diabetes. Such studies could particularly illuminate issues around cultural acceptability and the perceived barriers that patients face in accessing and engaging with care.

Comparative research across different types of health facilities, such as public versus private, and across diverse geographic regions could identify systemic variations in patient perceptions and quality of life outcomes. These insights could help policymakers tailor interventions to the specific needs of different settings.

Further investigations into the relationship between health workforce distribution, resource availability, and patient perceptions of service quality would be valuable. Understanding these dynamics could inform more effective human resource planning and supply chain management to support better care for NCD patients.

Finally, studies exploring the role of digital health technologies, such as mobile health applications and telemedicine, could assess their effectiveness in improving healthcare accessibility and continuity of care. This research is especially relevant as digital health initiatives continue to expand in diverse healthcare settings.

6.4 Final Remarks

By addressing these recommendations, policymakers, healthcare providers, and researchers can collaborate to improve healthcare service delivery, enhance the quality of life for individuals with NCDs, and reduce the burden of these diseases in Mombasa County and beyond. A patient-centred approach, combined with evidence-based strategies, is essential for creating a healthcare system that meets the unique needs of diverse populations and promotes better health outcomes.

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8.0 APPENDICES

Appendix A: Operationalization of Healthcare Service Delivery Domains Using the AAAQ Framework

Table 8: Operationalization of Healthcare Service Domains

Domain	Subdomain	Operation Description
Health Service Availability	Workforce	• Staff availability • Specialist access
	Infrastructure	• Diagnostic tools • Medication availability • Facility readiness
Health Service Accessibility	Geography	• Travel time • Travel Barriers • Transportation costs
	Economic	• Health insurance • Financial coping • Urban/Rural cost difference • Healthcare affordability • Cost impact on adherence • Health outcome due to cost
	Non-discrimination	• Discrimination experience • Healthcare inclusivity • Diagnosis understanding
	Information	• Information access • Information clarity • Information seeking • Communication satisfaction • Provider listening • Health info impact • Digital health info
Health Service Acceptability	Cultural Competency	• Cultural understanding • Cultural sensitivity • Cultural respect • Service tailoring • Influence of beliefs on medication
	Language	• Language barriers • Language accommodation
	Trust/Rapport	• Trust in Providers • Provider relationship
Health Service Quality	Safety	• Perceived safety • Safety of care • Concerns and preferences

	Health outcomes	• Treatment effectiveness • Provider listening • Confidence in the provider • Communication skills • Care wait time • Timely care • Provider confidence • Communication skills

Appendix B: Questionnaire

Pre-screening question:

1. **Do you feel comfortable understanding and discussing healthcare-related information in English or Swahili? /Je, unajisikia vizuri kuelewa na kujadili habari zinazohusiana na huduma za afya kwa Kiingereza au Kiswahili?**
   - ☐ Yes/ Ndiyo
   - ☐ No/ Hapana

Instructions for Use:

- If the respondent answers "No," they should be excluded from the study.
- If the respondent answers "Yes," they can proceed to the main part of the questionnaire.

Section 1: Demographic Information / Sehemu ya 1: Taarifa za Kidemografia

1. **Age / Umri: _______** (years/miaka)
2. **Gender / Jinsia:**
   - ☐ Male / Mwanaume
   - ☐ Female / Mwanamke
3. **Marital Status / Hali ya Ndoa:**
   - ☐ Single / Sijaoa/Sijaolewa
   - ☐ Married / Nimeoa/Nimeolewa
   - ☐ Divorced / Nimetalikiwa
   - ☐ Widowed / Mjane
   - ☐ Prefer not to specify / Napendelea kutojibu
4. **Education Level / Kiwango cha Elimu:**
   - ☐ No formal education / Sina elimu rasmi
   - ☐ Primary education / Elimu ya Msingi
   - ☐ Secondary education / Elimu ya Sekondari
   - ☐ Tertiary education / Elimu ya Kati
   - ☐ Higher education (undergraduate or above) / Elimu ya Juu (Chuo Kikuu au zaidi)
5. **Occupation / Kazi:**
   - ☐ Employed (full-time) / Mwajiriwa (wakati wote)
   - ☐ Self-employed / Kujiajiri
   - ☐ Unemployed / Sina kazi

☐ Retired / Mstaafu

☐ Student / Mwanafunzi

6. **Household Income / Kipato cha Nyumbani:**

☐ Less than KShs 10,000 / Chini ya KShs 10,000

☐ KShs 10,000 - KShs 29,999 / KShs 10,000 - KShs 29,999

☐ KShs 30,000 - KShs 49,999 / KShs 30,000 - KShs 49,999

☐ KShs 50,000 - KShs 99,999 / KShs 50,000 - KShs 99,999

☐ KShs 100,000 or more / Zaidi ya KShs 100,000

7. **Residential Area / Eneo la Makazi:**

☐ Urban / Mjini

☐ Suburban / Viunga vya Mji

☐ Rural / Vijijini

<u>Section 2: Availability of Healthcare Resources / Sehemu ya 2: Upatikanaji wa Rasilimali za Huduma za Afya</u>

1. **When you visit the health facility, do you feel that there are enough healthcare workers to attend to your needs? / Unapozuru kituo cha afya, je, unahisi kuna wafanyakazi wa kutosha wa afya kukuhudumia?**

o Yes, always / Ndiyo, kila wakati

o Yes, sometimes / Ndiyo, wakati mwingine

o No, there are usually not enough staff / Hapana, hakuna wafanyakazi wa kutoshao Not sure / Sijui

2. **How often are the medications you need for controlling your blood pressure or blood sugar available at the health facility? / Dawa unazohitaji kudhibiti shinikizo la damu au sukari ya damu hupatikana mara ngapi katika kituo cha afya?**

o Always available / Zinapatikana kila wakati

o Mostly available / Zinapatikana mara nyingi

o Sometimes available / Zinapatikana wakati mwingine

o Rarely available / Zinapatikana mara chache

o Never available / Hazipatikani kabisa

3. **Are you able to access the necessary tests (like blood pressure measurement, blood sugar testing) when you visit the health facility? / Je, unaweza kupata vipimo muhimu (kama kipimo cha shinikizo la damu, kipimo cha sukari) unapotembelea kituo cha afya?**

   o Always / Kila wakati

   o Most of the time / Mara nyingi

   o Sometimes / Wakati mwingine

   o Rarely / Mara chache

   o Never / Kamwe

4. **How often can you see a specialist (e.g., endocrinologist, cardiologist) if needed for your condition? / Mara ngapi unaweza kumuona mtaalamu (kama vile daktari wa magonjwa ya mfumo wa endokrini, daktari wa moyo) ikiwa unahitaji kwa hali yako?**

   o Always available / Anapatikana kila wakati

   o Mostly available / Anapatikana mara nyingi

   o Sometimes available / Anapatikana wakati mwingine

   o Rarely available / Anapatikana mara chache

   o Never available / Hapana kabisa

<u>Section 3: Accessibility of Healthcare Resources / Sehemu ya 3: Ufikivu wa Rasilimali za Huduma za Afya</u>

<u>Physical Accessibility / Ufikivu wa Kimwili</u>

1. **How long does it take you on average to reach your healthcare facility? / Kwa wastani, unachukua muda gani kufika katika kituo chako cha afya?**

   o Less than 30 minutes / Chini ya dakika 30

   o 30 minutes to 1 hour / Dakika 30 hadi saa moja

   o 1-2 hours / Saa 1-2

   o More than 2 hours / Zaidi ya saa 2

2. **How often do travel distances prevent you from accessing healthcare services when needed? / Mara ngapi umbali wa safari unakuzuia kupata huduma za afya unazohitaji?**

   o Always / Kila wakati

   o Often / Mara nyingi

o Sometimes / Wakati mwingine

o Rarely / Mara chache

o Never / Kamwe

3 Do transportation costs significantly impact your ability to seek healthcare services? / Je, gharama za usafiri zinaathiri kwa kiasi kikubwa uwezo wako wa kutafuta huduma za afya?

o Strongly Agree / Nakubaliana kabisa

o Agree / Nakubaliana

o Neutral / Sina maoni

o Disagree / Sikubaliani

o Strongly Disagree / Sikubaliani kabisa

<u>Economic Accessibility / Upatikanaji wa Kiuchumi</u>

4. **Do you have health insurance coverage that supports NCD treatment? / Je, una bima ya afya inayosaidia matibabu ya magonjwa yasiyo ya kuambukiza (NCDs)?**

   o Yes / Ndiyo

   o No / Hapana

   o Partial Coverage / Inafunika kwa kiasi

   o Not Sure / Sina uhakika

5. **How do you manage the costs associated with you condition care? / Unamudu vipi gharama zinazohusiana na utunzaji wa hali yako ya afya?**
   - o Using savings / **Kutumia akiba**
   - o Taking loans / **Kukopa**
   - o Receiving family support / **Msaada wa kifamilia**
   - o Community support / **Msaada wa jamii**
   - o Delaying or avoiding care / **Kuchelewesha au kuepuka matibabu**

6. **How would you describe the cost of healthcare in your area? / Ungeelezaje gharama ya huduma za afya katika eneo lako?**

   o Very Affordable / Nafuu sana

   o Affordable / Nafuu

   o Neutral / Sina maoni

   o Expensive / Ghali

   o Very Expensive / Ghali sana

7. **Do you notice a difference in healthcare costs between urban and rural areas? / Je, unahisi tofauti ya gharama za huduma za afya kati ya maeneo ya mijini na vijijini?**

   o Yes / Ndiyo

   o No / Hapana

   o Unsure / Sina uhakika

8. **Have high treatment costs ever affected your ability to adhere to prescribed medications? / Je, gharama za juu zimewahi kuzuia uwezo wako wa kufuata dawa?**

   o Yes / Ndiyo

   o No / Hapana

9. **Have you ever experienced a negative health outcome (e.g., worsening condition) due to being unable to afford medications? / Umewahi kupata athari mbaya ya kiafya (kama hali kuendelea kuwa mbaya) kutokana na kutoweza kumudu gharama za dawa?**

   o Yes / Ndiyo

   o No / Hapana

   o Prefer not to say / Napendelea kutojibu

Non-discrimination Accessibility / Upatikanaji bila Ubaguzi

10. **Have you ever felt that discrimination based on your socioeconomic status, gender, or ethnicity affected your access to care? / Umewahi kuhisi kuwa ubaguzi kulingana na hali yako ya kijamii, kijinsia au kikabila umeathiri upatikanaji wako wa huduma?**

    o Often / Mara nyingi

    o Sometimes / Wakati mwingine

    o Rarely / Mara chache

    o Never / Kamwe

11. **Do you believe that healthcare services in your area are inclusive and considerate of all individuals, regardless of their background? / Je, unaamini kuwa huduma za afya katika eneo lako zinawajumuisha watu wote na kuzingatia asili yao bila ubaguzi?**

    o Strongly Agree / Nakubaliana kabisa

    o Agree / Nakubaliana

o Neutral / Sina maoni

o Disagree / Sikubaliani

o Strongly Disagree / Sikubaliani kabisa

12. **How well do you understand your diagnosis and treatment options based on the information provided by your healthcare provider? / Je, unaelewa vipi uchunguzi wako wa matibabu na chaguzi za matibabu kulingana na taarifa zilizotolewa na mtoa huduma wako wa afya?**

o Very Well / Vizuri sana

o Well / Vizuri

o Neutral / Sina maoni

o Poorly / Vibaya

o Very Poorly / Vibaya sana

Information Accessibility/ Upatikanaji wa Taarifa

13. How easily can you access information about your health condition and treatment options? / Unapataje urahisi wa kupata taarifa kuhusu hali yako ya afya na chaguzi za matibabu?

o Very easily / Kwa urahisi sana

o Easily / Kwa urahisi

o Neutral / Sina maoni

o Difficult / Kwa ugumu

o Very difficult / Kwa ugumu sana

14. Do you feel that the health information you receive is easy to understand? / Je, unahisi kwamba taarifa za afya unazopokea ni rahisi kuelewa?

o Very easy to understand / Rahisi sana kuelewa

o Easy to understand / Rahisi kuelewa

o Neutral / Sina maoni

o Difficult to understand / Ngumu kuelewa

o Very difficult to understand / Ngumu sana kuelewa

15. How often do you seek additional information (online, brochures, etc.) to understand your health condition? / Ni mara ngapi unatafuta taarifa za ziada (mtandaoni, vipeperushi) ili kuelewa hali yako ya afya?

o Very often / Mara nyingi sana

o Often / Mara nyingi
o Occasionally / Mara chache
o Rarely / Mara nadra
o Never / Kamwe

16. How satisfied are you with the way healthcare providers communicate health information to you? / Umeridhika kiasi gani na jinsi watoa huduma za afya wanavyowasiliana nawe kuhusu taarifa za afya?
o Very satisfied / Nimeridhika sana
o Satisfied / Nimeridhika
o Neutral / Sina maoni
o Dissatisfied / Sijaridhika
o Very dissatisfied / Sijaridhika kabisa

17. Do you feel that your healthcare provider listens to your concerns and preferences? / Je, unahisi kwamba mtoa huduma wako wa afya anasikiliza matatizo yako na mapendekezo yako?
o Very much / Sana
o Somewhat / Kidogo
o Neutral / Sina maoni
o Not much / Sio sana
o Not at all / Kamwe

18. How well do you think health information affects your ability to prevent or manage chronic illnesses (like hypertension, and diabetes)? /Unadhanije taarifa za afya zinavyoathiri uwezo wako wa kuzuia au kusimamia magonjwa sugu (kama vile shinikizo la damu, kisukari)?
o Very well / Vyema sana
o Well / Vyema
o Neutral / Sina maoni
o Poorly / Vibaya
o Very poorly / Vibaya sana

19. Do you feel that digital health information helps you understand your health better? /Je, unahisi kwamba taarifa za afya za kidigitali zinakusaidia kuelewa afya yako zaidi?

o Strongly agree / Nakubaliana kabisa

o Agree / Nakubaliana

o Neutral / Sina maoni

o Disagree / Sikubaliani

o Strongly disagree / Sikubaliani kabisa

Section 4: Acceptability of Healthcare Resources / Sehemu ya 4: Ukubalifu wa Rasilimali za Huduma za Afya

1. **How important is it for you that healthcare providers understand your cultural background? / Ni muhimu kwa kiasi gani kwako kwamba watoa huduma za afya waelewe asili yako ya kitamaduni?**
   - ☐ Very important / Muhimu sana
   - ☐ Important / Muhimu
   - ☐ Neutral / Sina maoni
   - ☐ Not important / Sio muhimu
   - ☐ Not at all important / Sio muhimu kabisa

2. **Have you experienced any healthcare services that were particularly sensitive or insensitive to your cultural beliefs? / Je, umewahi kupata huduma za afya zilizozingatia au kutozingatia imani zako za kitamaduni?**
   - ☐ Yes, sensitive / Ndiyo, zilizingatia
   - ☐ Yes, insensitive / Ndiyo, hazikuzingatia
   - ☐ No, not applicable / Hapana, haikuhusu
   - ☐ Not sure / Sina uhakika

3. **To what extent do you feel that your cultural beliefs are respected by healthcare providers? / Unahisi kwa kiwango gani kwamba imani zako za kitamaduni zinaheshimiwa na watoa huduma za afya?**
   - ☐ Very much / Sana
   - ☐ Somewhat / Kidogo
   - ☐ Neutral / Sina maoni
   - ☐ Not much / Si sana
   - ☐ Not at all / Kamwe

4. **How often do you experience language or cultural barriers when seeking treatment? / Mara ngapi unakumbana na vizuizi vya lugha au kitamaduni unapojaribu kutafuta matibabu?**
    - ☐ Often / Mara nyingi
    - ☐ Sometimes / Wakati mwingine
    - ☐ Rarely / Mara chache
    - ☐ Never / Kamwe
5. **Do you think that healthcare services for are tailored to meet the needs of your community? / Unafikiri huduma za afya zimeundwa kukidhi mahitaji ya jamii yako?**
    - ☐ Yes, very well / Ndiyo, vizuri sana
    - ☐ Yes, somewhat / Ndiyo, kwa kiasi
    - ☐ Neutral / Sina maoni
    - ☐ No, not much / Hapana, si sana
    - ☐ No, not at all / Hapana, kamwe
6. **Do cultural or personal beliefs influence your decision to take prescribed medications? / Je, imani za kitamaduni au binafsi zinaathiri uamuzi wako wa kuchukua dawa zilizopendekezwa?**
    - ☐ Yes / Ndiyo
    - ☐ No / Hapana
    - ☐ Unsure / Sina uhakika
7. **To what extent do you trust your healthcare provider to deliver appropriate and effective care? / Kwa kiwango gani unamwamini mtoa huduma wako wa afya kutoa huduma inayofaa na yenye ufanisi?**
    - ☐ Completely / Kikamilifu
    - ☐ Mostly / Kwa kiasi kikubwa
    - ☐ Neutral / Kawaida tu
    - ☐ Somewhat / Kwa kiasi fulani
    - ☐ Not at all / Hata kidogo

Section 5: Quality of Healthcare Resources / Sehemu ya 5: Ubora wa Rasilimali za Huduma za Afya

1. **How safe do you feel the healthcare services you receive for your condition? / Unadhani huduma za afya kwa ajili ya hali yako ni salama kiasi gani?**
   - Very safe / Salama sana
   - Safe / Salama
   - Neutral / Kawaida tu
   - Unsafe / Si salama
   - Very unsafe / Si salama kabisa

2. **To what extent do you believe that the healthcare services you receive are effective in managing your condition? / Kwa kiwango gani unaamini kuwa huduma za afya unazopokea zina ufanisi katika kudhibiti magonjwa yako?**
   - Very effective / Zina ufanisi sana
   - Effective / Zina ufanisi
   - Neutral / Kawaida tu
   - Ineffective / Hazina ufanisi
   - Very ineffective / Hazina ufanisi kabisa

3. **How well do healthcare providers explain your treatment options and involve you in decision-making? / Watoa huduma za afya wanaelezea vipi chaguo zako za matibabu na kukuhusisha katika kufanya maamuzi?**
   - Very well / Vizuri sana
   - Well / Vizuri
   - Neutral / Kawaida tu
   - Poorly / Vibaya
   - Very poorly / Vibaya sana

4. **To what extent do you feel that your healthcare provider listens to your concerns and preferences? / Kwa kiwango gani unahisi kuwa mtoa huduma wako wa afya anasikiliza wasiwasi na mapendeleo yako?**
   - Very much / Sana sana
   - Somewhat / Kwa kiasi fulani
   - Neutral / Kawaida tu

- Not much / Siyo sana
- Not at all / Hata kidogo
- Very dissatisfied / Sijaridhika kabisa

5. **How would you rate the wait times for receiving care at your healthcare facility? / Ungewezaje kupima muda wa kusubiri kupokea huduma katika kituo chako cha afya?**
    - Very short / Mfupi sana
    - Short / Mfupi
    - Average / Wastani
    - Long / Mrefu
    - Very long / Mrefu sana

6. **How often do you face difficulties in scheduling appointments or receiving timely care? / Unakutana na ugumu mara ngapi wa kupanga miadi au kupokea huduma kwa wakati unaofaa?**
    - Very frequently / Mara kwa mara sana
    - Frequently / Mara nyingi
    - Occasionally / Wakati mwingine
    - Rarely / Mara chache
    - Never / Kamwe

7. **How confident are you in the skills and knowledge of your healthcare provider regarding your NCD? / Unajiamini kiasi gani kuhusu ujuzi na maarifa ya mtoa huduma wako wa afya kuhusu magonjwa yako yasiyo ya kuambukiza (NCDs)?**
    - Very confident / Nina uhakika sana
    - Confident / Nina uhakika
    - Neutral / Kawaida tu
    - Not confident / Sina uhakika
    - Not at all confident / Sina uhakika kabisa

8. **How would you rate the communication skills of your healthcare provider? / Ungewezaje kupima ujuzi wa mawasiliano wa mtoa huduma wako wa afya?**
    - Excellent / Bora sana
    - Good / Bora

- Fair / Wastani
- Poor / Duni
- Very poor / Duni sana

9. **How would you rate your overall satisfaction with your healthcare provider's communication style? / Ungezipa vipi kuridhika kwako kwa ujumla na mtindo wa mawasiliano wa mtoa huduma wako wa afya?**

   o Very satisfied / Nimeridhika sana

   o Satisfied / Nimeridhika

   o Neutral / Sina maoni

   o Dissatisfied / Sijaridhika

   o Very dissatisfied / Sijaridhika kabisa

Section 6: Importance of Availability, Accessibility, Acceptability, and Quality / Sehemu ya 6:

Please indicate how important the following factors are to you when receiving healthcare services, using the scale below: / Tafadhali onyesha ni kwa kiasi gani mambo yafuatayo ni muhimu kwako unapopokea huduma za afya, ukitumia kipimo kilicho hapa chini:

- 1 - Not important / Si muhimu
- 2 - Slightly important / Kidogo muhimu
- 3 - Moderately important / Kiasi muhimu
- 4 - Important / Muhimu
- 5 - Very important / Muhimu sana

1. **Availability of Healthcare Services / Upatikanaji wa Huduma za Afya**
   - The availability of doctors, nurses, medications, and diagnostic tools when you need them.
   - Upatikanaji wa madaktari, wauguzi, dawa, na vifaa vya uchunguzi wakati unavyovihitaji.

     ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
2. **Accessibility of Healthcare Services / Upatikanaji wa Kimwili wa Huduma za Afya**
   - The ease of physically accessing healthcare services, including location, transportation, and cost.

- Urahisi wa kufikia huduma za afya kimwili, ikijumuisha eneo, usafiri, na gharama.

  ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. **Acceptability of Healthcare Services / Ulinganifu wa Huduma za Afya**
   - The alignment of healthcare services with your cultural, religious, or personal values and preferences.
   - Ulinganifu wa huduma za afya na tamaduni zako, imani za kidini, au mapendeleo binafsi.

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. **Quality of Healthcare Services / Ubora wa Huduma za Afya**
   - The standard of care provided, including safety, effectiveness, and patient satisfaction.
   - Kiwango cha huduma kinachotolewa, ikijumuisha usalama, ufanisi, na kuridhika kwa mgonjwa.

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. **Which of the following do you think is the most important for you? (Please choose one) / Kati ya yafuatayo, lipi ni muhimu zaidi kwako? (Tafadhali chagua moja)**

   Availability of services / Upatikanaji wa huduma
   Accessibility of services / Upatikanaji wa kimwili wa huduma
   Acceptability of services / Ulinganifu wa huduma
   Quality of services / Ubora wa huduma

Appendix C: WHOQOL-BREF Tool

THE WORLD HEALTH ORGANISATION QUALITY OF LIFE INSTRUMENT (WHOQOL) –BREF

ENGLISH/KISWAHILI

The following questions ask how you feel about your quality of life, health, and other aspects. I will read each question-and-answer option to you. Please select the answer that is most relevant to you. If you don't know what to say in response to a question, the first thing that comes to mind is usually the best option.

''Maswali yafuatayo yanajaribu kuchunguza jinsi wewe unavyohisi hali yako ya afya na maisha yako kwa jumla. Nitakusomea maswali na vile vile hiari za majibu ambazo unazo. Tafahdahli chagua jibu ambayo inalingana na maoni yako au ni karibu na jibu lako'

Please keep in mind your hopes, wishes, and concerns. We ask that you reflect on your life over the past four weeks. ''Ukijibu maswali tafadhali jaribu ukumbuke kanuni, ridhaa, na shaka zako. Vile vile tungeuliza ukijibu wasali ukumbuke vitu ambazo zimefanyika maishani mwako kuanzia sasa na kurudi nyuma wiki nne vilizo pita'

<u>Codes:</u>

1. ☐ Very poor (Mbaya sana)
2. ☐ Poor (Mbaya)
3. ☐ Neither poor nor good (Sio mbaya wala sio mzuri)
4. ☐ Good (Nzuri)
5. ☐ Very good (Nzuri sana)

1. How would you score your overall life quality?
Je, ukikaripia hali ya maisha yako, je waweza kusemaje?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

<u>Codes:</u>

1. ☐ Very dissatisfied (Hai ridhishi sana)
2. ☐ Dissatisfied (Hai ridhishi)
3. ☐ Neither satisfied nor dissatisfied (Hai ridhishi wala haipendezi)

4. ☐ Satisfied (Inaridhisha)

5. ☐ Very satisfied (Inaridhisha sana)

2. How happy are you with your overall health?
Je, unaridhiswa na hali yako ya afya?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The questions below ask how you have gone through specific things in the past four weeks. 'Maswali yafuatayo yana jaribu kupima maarifa zako kuhusu vitu mbali mbali katika wiki nne zilizo pita'

Codes:

1. ☐ Not at all (Hakuna hata kidogo)

2. ☐ A little (Kidodgo)

3. ☐ A moderate amount (Kadiri)

4. ☐ Very much (Sana)

5. ☐ An extreme amount (Kabisa)

3. To what extent do you believe physical pain prevents you from carrying out your responsibilities? Ni kwa kiasi gani ambayo unaona kwamba maumivu ya mwili imekuzuiya kufanya vitu ambazo ungependa kuyafanya.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4. How much medical treatment do you require to continue your daily life?
Ni kwa kiasi gani ambayo unahitaji matibabu katika maisha yako ya kila siku?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

5. How much do you enjoy life? Ni kwa kadiri/kiasi gani ambayo wewe unafurahia maisha?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

6. To what extent do you feel your life to be important? Ni kwa kiasi gani ambayo wewe unaona kwamba maisha yako ina muhimu?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

<u>Codes:</u>

1. ☐ Not at all (Hakuna hata kidogo)
2. ☐ A little (Kidodgo)
3. ☐ A moderate amount (Kadiri)
4. ☐ Very much (Sana)
5. ☐ An extreme amount (Kabisa)

7. How well are you able to focus? Ni kwa kiasi gani ambayo wewe unaweza kukaza fikira ju ya jambo?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

8. How safe do you feel in your everyday life?
Ni kwa kiasi gani ambayo wewe unahisi usalama wako katika shughli zako za kila siku?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

9. How healthy is your external surroundings?
Je, sifa za mazingira yako unayaonaje?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The following questions ask about how you experienced or were able to do specific things in the past four weeks. Maswali yanayofuata yanauliza uwezo wako wakupima maarifa yako au kufanya vitu fulani kwa wiki nne zilizopita.

<u>Codes:</u>

1. ☐ Not at all (Hakuna hata kidogo)
2. ☐ A little (Kidodgo)
3. ☐ A moderate amount (Kadiri)
4. ☐ Very much (Sana)
5. ☐ An extreme amount (Kabisa)

10. Do you have strength for everyday activities? Je, una nguvu ya kutosha kufanya shughli za kawaida za kila siku?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

11. Do you accept your physical appearance? Je, una ridhika na umbo lako au hali yako ya kimwili?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

12. Do you have enough money to meet your needs? Je, una pesa za kutosha kutimiza mahitaji yako?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

13. How easy is it for you to get the information you need in everyday life?
Je, maelezo ambazo unazotaka katika maisha yako ya kila siku unayapata?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

14. How much free time do you have?
Je, ni kwa kiasi gani ambayo unapata nafasi ya kupumzika na kufaragha?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Codes:

1. ☐ Very poor (Mbaya sana)
2. ☐ Poor (Mbaya)
3. ☐ Neither poor nor good (Sio mbaya wala sio mzuri)
4. ☐ Good (Nzuri)
5. ☐ Very good (Nzuri sana)

15. How well can you move around?
Je, ni kwa kiasi gani ambayo unaweza kuwasiliana/kutembea?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Codes:

1. ☐ Very dissatisfied (Hai ridhishi sana)
2. ☐ Dissatisfied (Hai ridhishi)
3. ☐ Neither satisfied nor dissatisfied (Hai ridhishi wala haipendezi)
4. ☐ Satisfied (Inaridhisha)
5. ☐ Very satisfied (Inaridhisha sana)

16. How happy are you with your sleeping habits?

Je, ni kwa kiasi gani ambayo unaridhishwa na uwezo wako wa kulala?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

17. How confident are you in your ability to carry out your everyday activities?
Je, ni kwa kiasi gani ambayo wewe unaridhishwa na uwezo wako wa kjiendelza katika maisha yako ya kila siku?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

18. How happy are you with your work capability? Je, ni kwa kiasi gani ambayo wewe unaridhiswa na uwezo wako wa kufanya kazi?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

19. How happy are you with yourself? Je, ni kwa kiasi gani ambayo unaridhishwa na maisha yako?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

20. How pleased are you with your relations with others? Je, ni kwa kiasi gani ambayo unridhishwa na uhusiano yako na watu wengine?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

21. How happy are you with your intimate life? Je, ni kwa kiasi gani ambayo unridhishwa na maisha yako ya kimapenzi?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

22. How happy are you with the support you receive from your friends?
Je, ni kwa kiasi gani ambayo unridhishwa na usaidizi ambayo unpata kutoka marafiki zako?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

23. How happy are you with the present state of your living environment?
Je, ni kwa kiasi gani ambayo unridhishwa na hali ya makao ambayo unaishi?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

24. How happy are you with your access to healthcare?
Je, ni kwa kiasi gani ambayo unridhishwa na uwezo wa kupata huduma za matibabu?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

25. How happy are you with your mode of transportation?
Je, ni kwa kiasi gani ambayo unridhishwa na huduma za usafirishaji?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The following question asks how often you've experienced specific events in the past four weeks. 'Swali linalofuata linahusu mara ngapi wewe umehisi au kuarifu vitu mbali mbali katika wiki nne zilizo pita'

Codes:

1. ☐ Never (Hakuna hata kidogo)
2. ☐ Seldom (Kidogo)
3. ☐ Quite often (Mara kwa mara)
4. ☐ Very often (Sana)
5. ☐ Always (Kila mara)

26. How often do you have unpleasant feelings like blue mood, despair, anxiety, and depression? Je, kuhisi ya kuwa na hali ya moyo mzito, taruki au wasi wasi huja kwako mara ngapi?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Do you have any thoughts on the testing?
Je, una maoni yeyote kuhusu maswala ambayo yameulizwa?

Appendix D: WHOQOL-BREF Scores © World Health Organization 2004

Steps for Checking, Cleaning, and Computing Domain Scores for the WHOQOL-BREF

Steps	SPSS syntax for carrying out data checking, cleaning and computing totalscores
Check all 26 items from assessment have a range of 1-5	RECODE Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16Q17 Q81 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 (1=1) (2=2) (3=3) (4=4) (5=5) (ELSE=SYSMIS). (This recodes all data outside the range 1-5 to system missing.)
Reverse 3 negatively phrased items	RECODE Q3 Q4 Q26 (1=5) (2=4) (3=3) (4=2) (5=1). (This transforms negatively framed questions to positively framed questions.)
Compute domain scores	COMPUTE PHYS=MEAN.6(Q3, Q4, Q10, Q15, Q16, Q17, Q18) *4. COMPUTE PSYCH=MEAN.5(Q5, Q6, Q7, Q11, Q19, Q26) *4. COMPUTE SOCIAL=MEAN.2(Q20, Q21, Q22) *4. COMPUTE ENVIR=MEAN.6(Q8, Q9, Q12, Q13, Q14, Q23, Q24, Q25) *4. (These equations calculate the domain scores. All scores are multiplied by 4 so asto be directly comparable with scores derived from the WHOQOL-100. The '.6' in 'mean.6' specifies that 6 items must be endorsed for the domain score to be calculated.)
Transform scores to a 0-100 scale	COMPUTE PHYS=(PHYS-4) *(100/16). COMPUTE PSYCH=(PSYCH-4) *(100/16). COMPUTE SOCIAL=(SOCIAL-4) *(100/16). COMPUTE ENVIR=(ENVIR-4)*(100/16).
Delete cases with >20% missing data	COUNT TOTAL=Q1 TO Q26 (1 THRU 5). (This command creates a new column 'total'. 'Total' contains a count of the WHOQOL-BREF items with the values 1-5 that have been endorsed by each subject. The 'Q1 TO Q26' means that consecutive columns from 'Q1', the first item, to 'Q26', the last item, are included in the count. It therefore assumes that data is entered in the order given in the assessment.) SELECT IF (TOTAL>=21).EXECUTE. (This second command selects only those cases where 'total', the total number of items completed, is greater than or equal to 80%. It deletes the remaining cases from the dataset.)

Appendix E: Consent Form

Consent Form for Participation in Research Study

Introduction/ *Utangulizi:*

This consent form is provided to confirm your voluntary participation in this study on healthcare perceptions and quality-of-life outcomes for individuals managing non-communicable diseases (NCDs) in Mombasa County. Your involvement is entirely voluntary, and you may withdraw from the study at any time without penalty. The information gathered will contribute to a better understanding of health service delivery and quality of life for NCD patients.

Fomu hii ya ridhaa imeletwa ili kuthibitisha ushiriki wako wa hiari katika utafiti huu juu ya mitazamo ya huduma za afya na matokeo ya ubora wa maisha kwa watu wanaosimamia magonjwa yasiyo ya kuambukiza (NCDs) katika Kaunti ya Mombasa. Ushiriki wako ni wa hiari kabisa, na unaweza kujiondoa kwenye utafiti huu wakati wowote bila adhabu yoyote. Taarifa zitakazokusanywa zitachangia katika kuelewa zaidi utoaji wa huduma za afya na ubora wa maisha kwa wagonjwa wa NCD.

Researcher's Contact Information:

- **Name:** ____
- **Position*:*** ____
- **Phone*:*** ____
- **Email*:*** ____

Study Description*/ Maelezo ya Utafiti:*

- **Purpose of the Research/ *Lengo la Utafiti:*** This study aims to assess perceptions of health service delivery for NCD management and how these perceptions influence the quality of life among patients in Mombasa County/ *Utafiti huu unalenga kutathmini mitazamo ya utoaji wa huduma za afya kwa magonjwa yasiyo ya kuambukiza na jinsi mitazamo hii inavyoathiri ubora wa maisha miongoni mwa wagonjwa katika Kaunti ya Mombasa.*

- **Activities Involved/ Shughuli Zinazohusishwa:** Participants will be asked to complete a questionnaire on their experiences and perspectives on healthcare access, acceptability, and outcomes related to managing NCDs/ *Washiriki wataulizwa kujaza dodoso kuhusu uzoefu wao na mitazamo yao juu ya upatikanaji wa huduma za afya, kukubalika kwake, na matokeo yanayohusiana na usimamizi wa NCDs*.
- **Duration of Participation/ *Muda wa Ushiriki*:** The questionnaire should take approximately 10-15 minutes/ *Kujaza dodoso kutachukua takribani dakika 10-15.*
- **Location of the Study/ *Mahali pa Utafiti:*** Coast General Teaching and Referral Hospital (Mombasa County)/ *Hospitali ya Mafunzo na Rufaa ya Coast General (Kaunti ya Mombasa).*

Risks and Benefits/ Hatari na Manufaa**:**

- **Potential Risks/ *Hatari Zilizopo:*** There are minimal risks associated with this study, primarily limited to potential discomfort when discussing personal health experiences. You are free to skip any questions that make you uncomfortable/ *Kuna hatari ndogo zinazohusishwa na utafiti huu, hasa ikiwa ni hisia zisizo za kawaida zinazoweza kujitokeza wakati wa kujadili uzoefu wa afya binafsi. Una uhuru wa kuruka maswali yoyote yanayokufanya ujisikie kutofurahia.*
- **Benefits/ *Manufaa:*** While there is no direct benefit to participants, the study may contribute to improving healthcare policies and practices in NCD management, leading to better healthcare experiences and quality of life for patients in Mombasa County. Participants may also gain valuable insights into their health management/ *Ingawa hakuna faida ya moja kwa moja kwa washiriki, utafiti huu unaweza kusaidia kuboresha sera na mazoea ya huduma za afya katika usimamizi wa NCD, na hivyo kuleta uzoefu bora wa huduma za afya na ubora wa maisha kwa wagonjwa katika Kaunti ya Mombasa. Washiriki pia wanaweza kupata uelewa wa thamani juu ya usimamizi wa afya yao.*

Confidentiality/ *Usiri:*

Your participation will be kept confidential. All data collected will be anonymized, and any personal identifiers will be removed from research reports or publications to protect your privacy/ *Ushiriki wako utahifadhiwa kwa siri. Data zote zitakazokusanywa zitafanywa kuwa* *za siri, na vitambulisho vyovyote binafsi vitaondolewa katika ripoti au machapisho yanayotokana na utafiti huu ili kulinda faragha yako.*

Consent/*Ridhaa:*

By signing below, you confirm that you/ *Kwa kusaini hapa chini, unathibitisha kwamba:*

- Have read and understood the information above/ *Umesoma na kuelewa taarifa zilizo hapo juu.*
- Have had an opportunity to ask questions, and those questions have been answered to your satisfaction/ *Umepewa nafasi ya kuuliza maswali, na maswali hayo yamejibiwa kwa ufanisi.*
- Consent to participate in this research study/ *Unakubali kushiriki katika utafiti huu.*

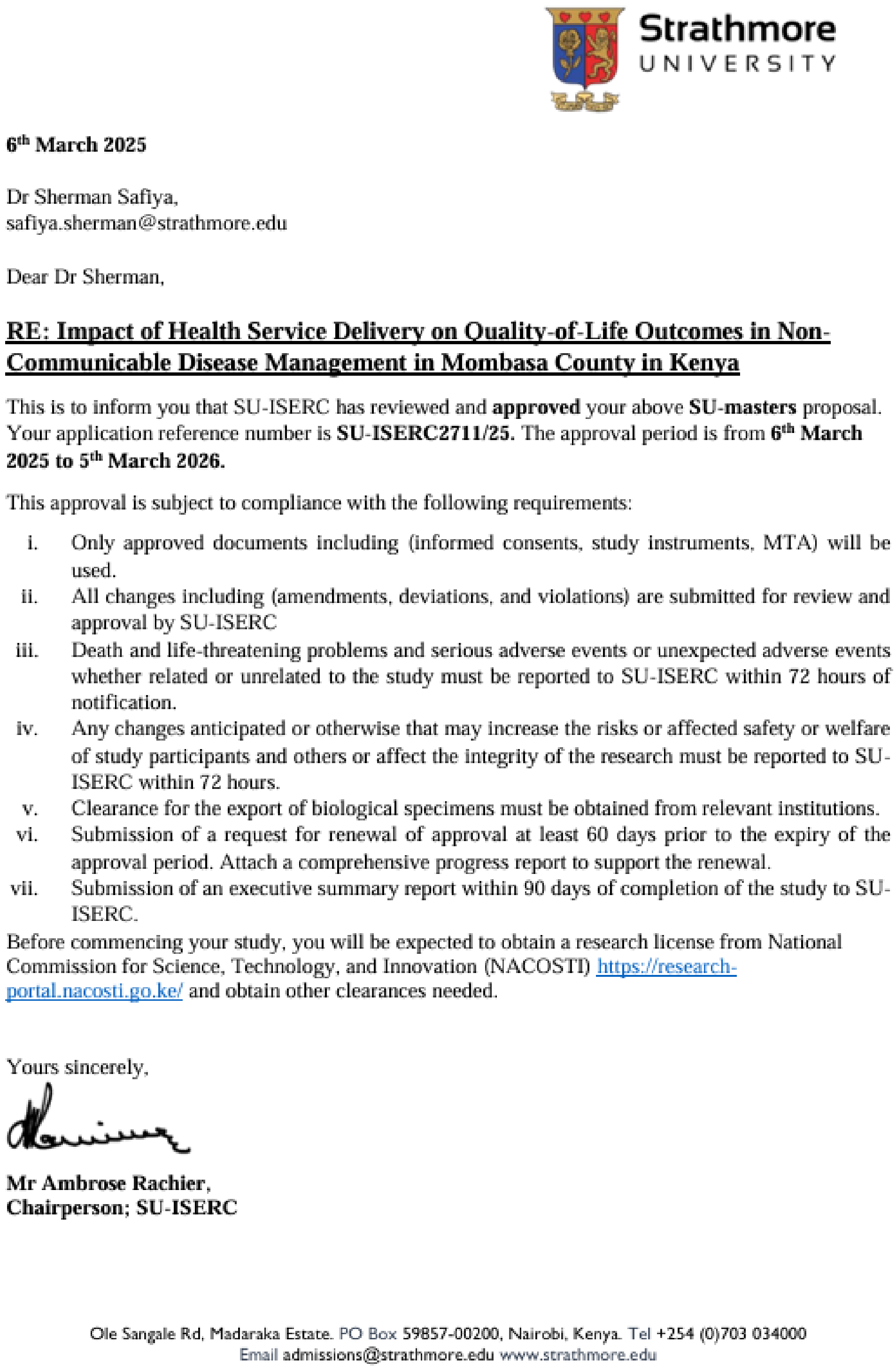
Participant's Signature/ *Sahihi ya Mshiriki:* __________________________

Date/ *Tarehe:* ____________________

Researcher's Signature/ *Sahihi ya Mtafiti:* __________________________

Date /*Tarehe:* ____________________

Appendix F: SU IREC Ethical Approval Letter



Strathmore
UNIVERSITY

6th March 2025

Dr Sherman Safiya,
safiya.sherman@strathmore.edu

Dear Dr Sherman,

RE: Impact of Health Service Delivery on Quality-of-Life Outcomes in Non-Communicable Disease Management in Mombasa County in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2711/25.** The approval period is from **6th March 2025 to 5th March 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

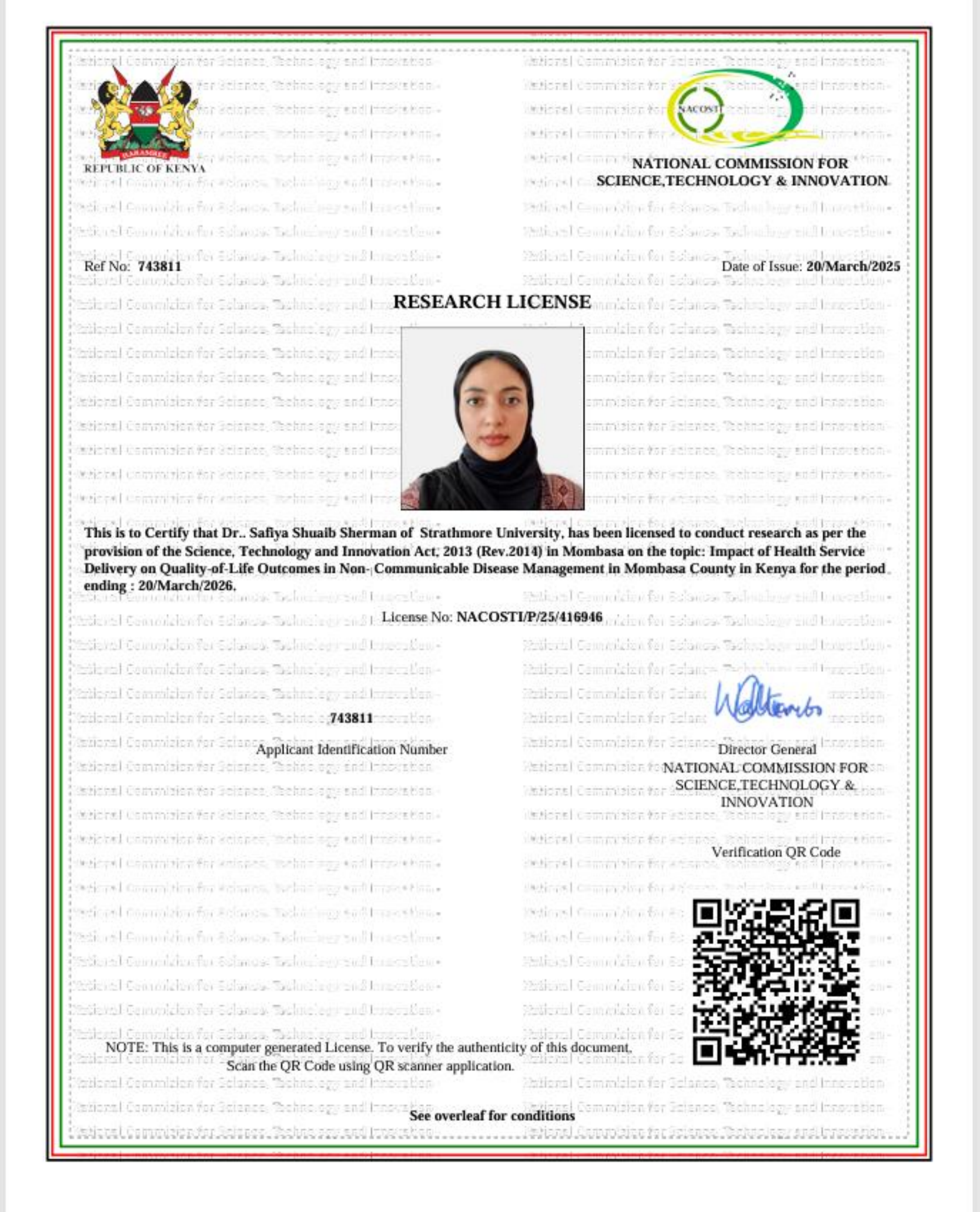
Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email admissions@strathmore.edu www.strathmore.edu

Appendix G: NACOSTI Ethical Approval Letter



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **743811**

Date of Issue: **20/March/2025**

RESEARCH LICENSE

This is to Certify that Dr.. Safiya Shuaib Sherman of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: Impact of Health Service Delivery on Quality-of-Life Outcomes in Non- Communicable Disease Management in Mombasa County in Kenya for the period ending : 20/March/2026.

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743811
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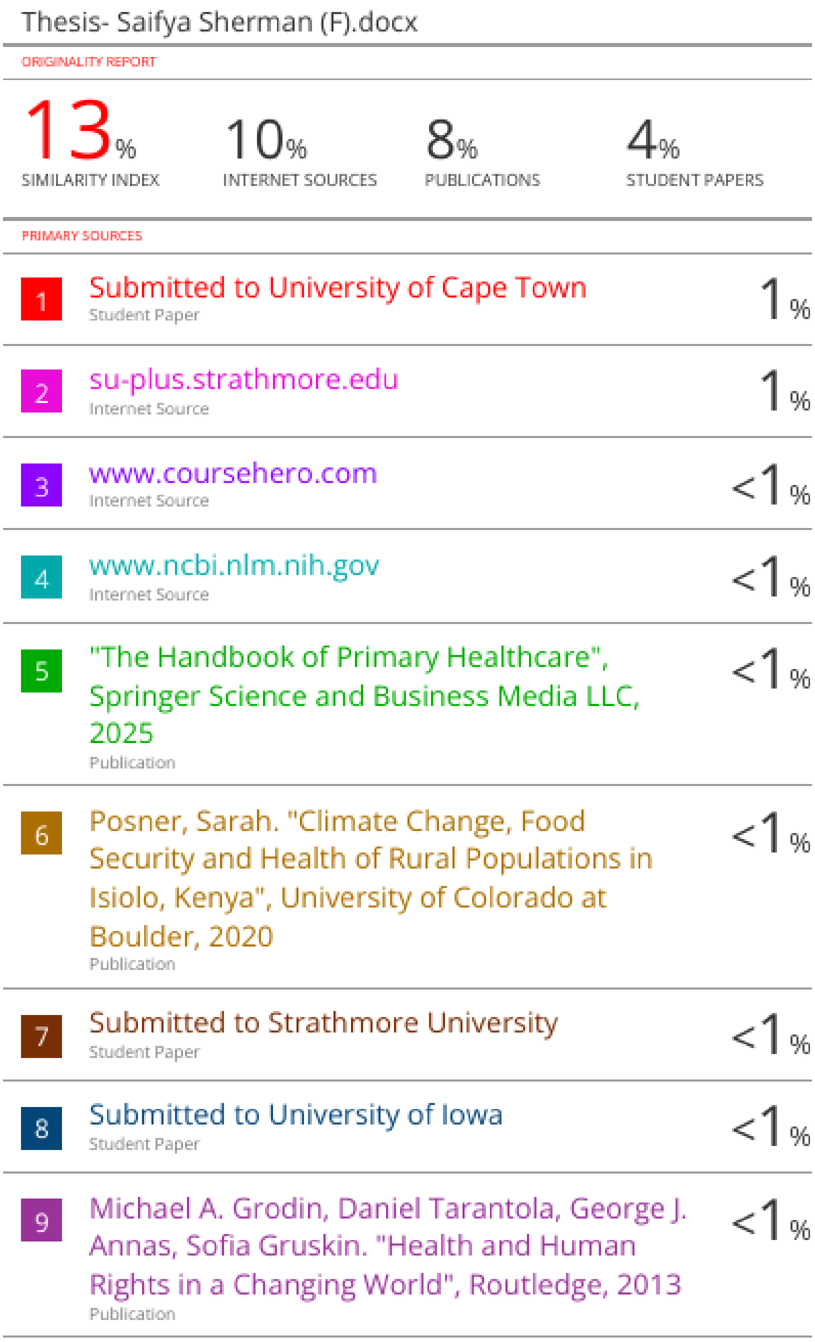
See overleaf for conditions

Appendix H: Similarity Report



Thesis- Saifya Sherman (F).docx

ORIGINALITY REPORT

13%	10%	8%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Cape Town Student Paper	1%
2	su-plus.strathmore.edu Internet Source	1%
3	www.coursehero.com Internet Source	<1%
4	www.ncbi.nlm.nih.gov Internet Source	<1%
5	"The Handbook of Primary Healthcare", Springer Science and Business Media LLC, 2025 Publication	<1%
6	Posner, Sarah. "Climate Change, Food Security and Health of Rural Populations in Isiolo, Kenya", University of Colorado at Boulder, 2020 Publication	<1%
7	Submitted to Strathmore University Student Paper	<1%
8	Submitted to University of Iowa Student Paper	<1%
9	Michael A. Grodin, Daniel Tarantola, George J. Annas, Sofia Gruskin. "Health and Human Rights in a Changing World", Routledge, 2013 Publication	<1%