AFRICAN UNION AND THE ATTAINMENT OF 21ST CENTURY HEALTH NEEDS IN AFRICA: THE MEDIATING ROLE OF GOVERNANCE

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Rasmata Nana

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Approval of the Thesis

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This Thesis by Rasmata Nana has been approved by the committee members below, who recommend it be accepted by the faculty of Unicaf University in Zambia in partial fulfillment of requirements for the degree of

Doctorate of Business Administration (DBA)

Thesis Committee:

Dr Susan Khasenye Wasike, Supervisor

Dr Elena Papadopoulou, Chair

Prof. Olatunde Julius Otusanya, External examiner

Dr Palanivel Rathinasabapathi Velmurugan, Internal examiner

Abstract

AFRICAN UNION AND THE ATTAINMENT OF 21ST CENTURY HEALTH NEEDS IN AFRICA: THE MEDIATING ROLE OF GOVERNANCE

Rasmata Nana

Unicaf University in Zambia

Health systems across African countries face inefficient and insufficient working modules that impact human health. In the 21st century, global initiatives to improve global health began with the establishment of the African Union (AU) to enhance the well-being of individuals worldwide. The purpose of this study was to investigate the African Union's performance in attaining 21st-century health needs in Africa with governance as a mediating role. The study was guided by 5 research questions and informed by pertinent governance, financing, quality, and distribution theories. each providing a specific lens through which to analyze the complex dynamics of the African health initiatives and their impact on 21st-century health needs in Africa

A qualitative grounded theory was used for in-depth exploration of the healthcare initiatives and to develop a comprehensive theory that captures the interplay of health governance, health financing, and health outcomes in Africa. Purposive multi-stage sampling was used to draw the sample of this study from the population of African Nations that make up the AU. Burkina Faso, Botswana, Cameroon, Côte d'Ivoire (Ivory Coast), Democratic Republic of Congo, Egypt, Equatorial Guinea, Ghana, Kenya, Morocco, Mozambique, Namibia, Nigeria, Senegal, South Africa, Sudan, Swaziland, Tanzania, Zambia and Zimbabwe were sampled. Qualitative data was analyzed using thematic analysis.

The study's findings revealed the significance of well-designed health financing policies and efficient money transfer systems for attaining health-related Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC). The African CDC's strategic agenda is vital in disease detection, partnerships, and emergency preparedness. The study found that access to quality medicines is crucial, with innovative approaches and proper dosage forms ensuring positive health outcomes. African State governments contribute through transparency, coalition building, equitable resource allocation, and policy implementation. The findings led to developing Health Systems Dynamics Theory.

This study comprehensively explains the intricate dynamics driving 21st-century health needs achievement in African nations. By investigating key factors, policies, and stakeholders, the research underscores the importance of financing, collaborative efforts, access to quality medicines, and effective governance in fostering sustainable and equitable healthcare systems in the African continent. Future research on how enacting and strengthening adaptive governance structures within the health systems of AU member states will ensure ongoing effectiveness in Africa's healthcare system.

Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

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Dedication

I dedicate this work to my lovely children who have made me stronger, and all who are proud of my achievements. I am truly thankful and honored to have you.

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First, I would like to thank the Almighty God for guiding and providing me the strength and will to pursue my degree. I would further like to extend my sincere thanks to my supervisor Dr. Susan Wasike for her continuous guidance, support, and prompt feedback throughout my various tasks for this dissertation.

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List of Abbreviations

Active Pharmaceutical Ingredients- APIs

African Continental Free Trade Area- AfCFTA

African Medicine Agency- AMA

African Medicines Regulatory Harmonization- AMRH

African Union- AU

ARV- Antiretroviral

Automated Teller Machines-ATMs

Autoregressive Distributed Lag- ARDL

Centers for Disease Control and Prevention- CDC

Capital Structure Irrelevance- CSI

Cardiovascular Disease- CVD

Community-Based Health Insurers-CBHI

Compulsory Health Insurance- CHI

Department of Social Welfare- DSW

Direct Health Facility Financing- DHFF

Disease Control and Prevention- DCP

Ebola Virus Disease- EBV

Essential Medicine-EM

Essential Medicines List- EML

Emergency Medical Services- EMS

Emergency Response Preparedness- ERP

Family Smart Card- FSC

Federal General Director of Pharmacy- FGDOP

Global Health Initiatives- GHI

Good Governance for Medicines- GGM

Gross domestic Product- GDP

Healthcare-Associated Infections- HAIs

Health Financing Strategy-HFS

Health Facilities Governing Committees-HFGCs

Human Immunodeficiency Virus/Acquired ImmunoDeficiency Syndrome – HIV/AIDS

Improved Community Health Fund- iCHF

Institutional Review Board- IRB

International Health Regulations- IHR

Laboratory System Networks- LSN

Low and Middle Incomes Countries- LIMCs

Medical Assistance Scheme- MAS

Millennium Development Goals-MDGs

MMRV- Measles, Mumps, Rubella and Varicella Vaccine

Mobile Money Transfers- MMTs

Moroccan Ministry of Health and Social Protection -MSPS

National Essential Medicines List- NEML

National Family Health Survey- NHFS

National Health Insurance Fund- NHIF

National Public Health Improvement Initiative- NPHII

National Public Health and Institutes and Research- NPHIR

National Regulatory Authorities-NRAs

Non- Governmental Organization- NGO

Non-Communicable Diseases-NCDs

Organization of African Unity- OAU

Out-of-Pocket- OOP

Pecking Order Theory-POT

Personal Protective Equipment- PPE

Public Health Information Systems- PHIS

Régime d'Assistance Médicale-RAMED

Regional Collaborating Centers- RCC

Research and Development- R&D

Sector-Wide Approach- SWAp

Small and Medium Enterprises- SMEs

Sub-Saharan Africa- SSA

Surveillance and Disease Intelligence- SDI

Sustainable Development Goals- SDGs

Therapeutic Drugs- TDs

Unicaf University Research Ethics Committee-UREC

United Nations-UN

United States Agency for International Development-USAID

Universal Health Coverage- UHC

Universal Health Insurance- UHI

West African Economic and Monetary Union- UEMOA (French abbreviation)

Word Health Organization- WHO

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CHAPTER 1: INTRODUCTION

African Union succeeded the Organization of African Unity (OAU) established in 1963 to build a united and free continent that controls its own destiny. The OAU was meant to restore the dignity of Africans in the post-colonial period and promote freedom and equality. The organization was also tasked with promoting unity and solidarity among African countries, eliminating all kinds of colonialism, and enhancing international cooperation. Despite a few successes, the OAU The majorly failed to fulfill its mandate (Kufuor, 2005). One of the reasons why the OAU failed is that it strictly upheld the members' sovereignty and could not interfere with their internal matters, even during crises. The organization also restricted the powers of the secretary-general and failed to resolve many civil wars within the continent (Kufuor, 2005). The above-mentioned challenges, together with the need to shift attention from decolonization to Africa's growth and economic development, led to the dissolution of the OAU in 1999.

African leaders launched the African Union (AU) in 2002 with hopes that it would overcome the weaknesses of its predecessor. The AU's responsibilities included promoting unity and solidarity among African states, enhancing peace and security, defending the sovereignty of the member states, protecting people's rights, and promoting sustainable development (Sarkin, 2009; Moolakkattu, 2010; Bamidele, 2016). So far, AU's successes include maintaining peace in Africa, influencing African leaders to be more liberal, and making laws on refugee management and other important issues. On the downside, the AU has failed to meet the needs of the ordinary African. Also, it has alienated ordinary Africans from the decision-making process, failed to hold leaders accountable, and continued to overly depend on foreign aid (Tieku, 2019). This makes it an appropriate research subject in Africa.

In the landscape of the 21st century, the African continent stands at a crossroads where the canvas of health challenges is painted with intricate threads of complexity and urgency. The African health landscape has become an intricate concern regarding a myriad of interconnected challenges that transcend borders, cultures, and socio-economic strata (World Health Organization, 2021). The continent's struggle against these challenges has brought to the forefront the need for innovative and holistic solutions that can address the multifaceted nature of its health needs. At the forefront of these challenges is the persistent burden of infectious diseases, which cast a long shadow over the region's progress. Diseases such as malaria and HIV/AIDS continue to exert an enduring toll on the health and well-being of African communities (Adewopo, 2021). Malaria, transmitted through the bite of infected mosquitoes, remains a formidable adversary, particularly in sub-Saharan Africa, where the majority of cases occur (Agudelo Higuita et al., 2021). Similarly, the increasing cases of different types of diseases, such as HIV/AIDS, while seeing commendable progress in terms of treatment and awareness, remains a significant health crisis, affecting millions of lives and families across the continent (Adeyeye et al., 2021). The ongoing fight against these infectious diseases is evidence of the resilience of the African people and their dedication to overcoming adversity. However, as the 21st century unfolds, Africa finds itself facing a new tide of health challenges that extend beyond infectious diseases. The rise of non-communicable ailments poses an additional layer of complexity to the health landscape (Formenti et al., 2022).

Also, cardiovascular diseases, once associated with industrialized nations, have now permeated African societies at alarming rates. The continent's changing lifestyle patterns, urbanization, and shifts in dietary habits have contributed to a surge in conditions such as

hypertension, heart disease, and strokes (Minja et al., 2022). Furthermore, the prevalence of diabetes is escalating at an alarming rate, compounding the health challenges faced by the population. This evolving health profile necessitates a paradigm shift in how health systems are designed, emphasizing prevention, early intervention, and holistic care approaches (Minja et al., 2022). Amidst this backdrop, the urgency to address the health needs of Africa is palpable. The continent's diversity, both in terms of its people and its health challenges, calls for strategies that are responsive and adaptable. Pereira et al. (2021) explained that as the African continent strives to forge a path toward a healthier future, the importance of innovation cannot be overstated. Pereira et al. (2021) explained that innovative solutions that harness the power of technology, data analytics, and interdisciplinary collaboration could revolutionize healthcare delivery, enhance disease surveillance, and improve access to vital medical services even in the most remote regions.

The call for holistic solutions is equally compelling. The interplay of health determinants, including social, economic, cultural, and environmental, underscores the need for an integrated approach that transcends the confines of traditional healthcare systems (Whitman et al., 2022). The challenges of health inequities, gender disparities, and the interconnectedness between health and socio-economic development necessitate a comprehensive strategy that embraces education, gender equality, poverty reduction, and community engagement (Whitman et al., 2022). In navigating this complex issue of health challenges, Africa stands at a pivotal moment. The convergence of infectious diseases and non-communicable ailments, along with the complexities of governance, resource allocation, and global health dynamics, demands a coordinated effort that spans local, national, and continental levels in Africa (Pereira et al., 2021). As the African continent charts its course forward, the imperative for innovative, holistic, and collaborative

solutions becomes not only a pragmatic necessity but a moral obligation to ensure the health and well-being of generations to come (Pereira et al., 2021). These challenges are further compounded by disparities in access to healthcare services, socio-economic inequalities, and infrastructural inadequacies. In the pursuit of addressing these multifaceted health needs, a fundamental yet often overlooked determinant comes to the force of governance (Pereira et al., 2021).

Governance, in its myriad forms, represents the structures, processes, and institutions that underpin a society's ability to make decisions, allocate resources, and implement policies (Nutbeam & Muscat, 2021). It functions as a linchpin, shaping the course of development across sectors, with healthcare being a particularly salient domain (Nutbeam & Muscat, 2021). Against this backdrop, the AU emerges as a key player in the continent's health trajectory. Formed in 2001, the AU serves as a continental organization aimed at fostering unity, cooperation, and development among African nations (Wapmuk, 2021). Its vision is deeply intertwined with the overarching goals of advancing healthcare accessibility, quality, and equity for all African citizens (Wapmuk, 2021).

Governance, in its forms and functions, serves as the architectural foundation upon which the structure of society is constructed (Nutbeam & Muscat, 2021). It encompasses the intricate web of structures, processes, and institutions that collectively guide a nation's decision-making, resource allocation, and policy implementation (Nutbeam & Muscat, 2021). This intricate web, often concealed from view but omnipresent in its influence, possesses the power to shape the trajectory of a nation's development across every sector. Sharma et al. (2021) explained that governance within the healthcare context operates as a linchpin, orchestrating the allocation of resources that sustain medical infrastructure, shaping policies that determine access to care, and

directing decisions that can have life-altering implications for individuals and communities. Additionally, Sharma et al. (2021) discussed that effective healthcare governance could bolster healthcare systems' efficiency, optimize the utilization of limited resources, and engender a sense of trust between citizens and their healthcare institutions. Conversely, weak governance can foster inefficiency, corruption, and disparities that undermine the aspirations of equitable healthcare access and quality. Amidst this intricate interplay of governance and health, the AU emerges as a pivotal actor in the continent's health narrative. The AU stands as proof of Africa's resolve to chart its course toward unity, cooperation, and shared development (Izugbara et al., 2020). It represents a profound evolution from the Organization of African Unity (OAU), transcending political sovereignty to embrace a vision that encompasses socioeconomic development, cultural integration, and health equity (Izugbara et al., 2020).

The inception of the AU in 2001 marked a pivotal moment in Africa's history. While the OAU played a crucial role in decolonization and fostering a sense of continental solidarity, the AU took the concept of unity to a new dimension (Izugbara et al., 2020). It recognized that political independence alone was not enough to catalyze the comprehensive growth and well-being of the African people. Hence, the AU set out to establish a platform that not only celebrated sovereignty but also cultivated collaborative endeavors that would uplift the lives of all Africans (Izugbara et al., 2020). At the core of the AU's mission lies the pursuit of socioeconomic development. Recognizing the vast potential of Africa's human and natural resources, the AU has championed initiatives to promote economic integration, trade, and investment among member states (Wapmuk, 2021). Mechanisms like the African Continental Free Trade Area (AfCFTA), launched in 2018, exemplify the AU's commitment to fostering intra-African trade, boosting

industrialization, and ultimately reducing the continent's economic reliance on external partners (Apiko et al., 2020).

Cultural integration stands as another fundamental pillar of the AU's vision. Africa's cultural diversity in terms of languages, traditions, and identities is celebrated within the AU framework, as it acknowledges that shared cultural understanding can strengthen bonds among nations (Eze & Wal, 2020). Programs promoting cultural exchange, educational partnerships, and cross-border collaborations in the arts and sciences underline the AU's dedication to nurturing a sense of unity that transcends political boundaries (Eze & Wal, 2020). Moreover, the AU recognizes that health equity is integral to achieving holistic development, hence supporting the development of health initiatives. Christoffels et al. (2023) explained that initiatives such as the Africa CDC (Centers for Disease Control and Prevention) were established to enhance the continent's ability to prevent, detect, and respond to health threats. Similarly, Kirigia and Asante (2020) discussed that The AU's collaborative efforts in addressing epidemics like Ebola and COVID-19 underscore its commitment to safeguarding the well-being of African populations and ensuring access to quality healthcare for all. In essence, the AU's evolution from the OAU reflects Africa's determination to transform health challenges into opportunities, unity into strength, and dreams into tangible realities. Kirigia and Asante (2020) established that the AU's multifaceted approach to unity, encompassing socioeconomic growth, cultural cohesion, and health equity, exemplifies a holistic understanding of development that extends beyond political borders. Further, Eze and Wal (2020) noted that as the AU continues to stride forward, its vision serves as an inspiration not only to Africa but to the world, reminding us of the power of collaboration, shared aspirations, and a resolute commitment to forging a brighter future for all.

1.1. Statement of the Problem

The AU was established to help the African continent overcome various challenges in health, security, human rights, and other areas. The organization (AU) was expected to perform better than the OAU and lead the continent to economic growth and development. Although the organization has succeeded in several areas, it has had significant failures (Tieku, 2019). The most notable is the failure to meet the needs of ordinary Africans (Tieku, 2016). Many of the non-elite are yet to experience the benefits of the African Union despite the promises of a more cohesive and developed continent. The state of healthcare in Africa is sufficient evidence of the task ahead and indicates that the African Union should seriously take the lead in providing better health outcomes. For instance, according to the World Health Organization (2021), Africa accounts for 60% of the world's HIV/AIDS cases and 90% of the 300-500 million malaria cases globally. In 2017, Sub-Saharan Africa alone accounted for around two-thirds of maternal deaths worldwide (WHO, 2019). Moreover, the EBOLA and COVID-19 pandemics exacerbated Africa's health challenges, making it imperative to find suitable solutions (Kuhn et al., 2021).

East Africa reported 7.68% HIV/AIDS cases (Mwaniki et al., 2023), West Africa-between 1.5%-3.4% (Dauda, 2018), Central Africa- between 2.1%-2.5% (Dauda, 2018), North Africa-between 0.7% to 24.8% (Mumtaz et al., 2018), South Africa-between 8.3%- 18.1% (Simbayi et al., 2019). Regarding Tuberculosis cases, East African (Kenya) -38%; South Africa -47% (Brennan et al., 2020); West Africa (Sub-Saharan African countries) 84% (Youngui et al., 2020); North Africa (like Egypt) with 71%-75% (Negm et al., 2019), and Central Africa-over100 cases per 100,000 people (Martial et al., 2021).

For malaria, East Africa reported 52,684 cases (Kamau et al., 2022), West Africa with 51.1% of malaria cases (Zou et al., 2023), North African like Algeria has 10,000 cases (Tabbabi et al., 2022), South Africa with nearly 5,787 cases between 2010-2019 (Tsoka-Gwegweni, 2022), and Central Africa with over 380,000 cases per year (Korzeniewski et al., 2021).

The fulfillment of AU's development goals is sometimes hindered by poor governance or unfavorable leadership styles in member countries (Muma, 2018; Adeniyi et al., 2016). The African healthcare system also faces three major challenges: inadequate human resources, poor leadership and management, and inadequate financial support (Oleribe et al., 2019). Consequently, this has led to a significant number of African nations being unable to meet the basic requirements for good healthcare systems. The AU is expected to address these challenges through coordinated activities and policies at the continental level. However, there is inadequate data to measure the organization's performance in fulfilling its health mandate. In addition, in Africa, governance influences policy implementation, resource allocation, and stakeholders' engagement (Muma, 2018). Moreover, the fulfillment of AU's development goals is sometimes hindered by poor governance or unfavorable leadership styles in member countries (Muma, 2018; Adeniyi et al., 2016). The proposed research seeks to fill this gap by investigating the performance of the AU in the attainment of 21st-century health needs in Africa, with governance as the mediating factor. Governance is a suitable mediating variable because (Schalk, Auriacombe & Brynard, 2005) believe that the performance of the AU depends on the ability and willingness of Africa's democratic governments to support the AU's principles, agenda and its existing political will and attitude.

This research study thus aimed to address the challenges by delving into the mediating role of governance in the African Union's efforts to meet the diverse health needs of the 21st century in Africa. This research study focuses on an in-depth exploration of the intricate interplay between the African Union's initiatives and the pursuit of 21st-century health needs in Africa. At the heart of this exploration lies the mediating role of governance, a dynamic force that can facilitate or impede the translation of policy aspirations into tangible health outcomes. Governance encompasses not only the political dimensions but also regulatory frameworks, policy formulation processes, resource allocation mechanisms, and the engagement of diverse stakeholders (Nutbeam & Muscat, 2021). The relationship between effective governance and health outcomes is a symbiotic one; while strong governance structures can bolster health systems, improved health outcomes can, in turn, contribute to more stable and prosperous societies (Madise & Isike, 2020). Additionally, as this research focuses on unraveling the interplay between the AU's initiatives and health outcomes, the exploration of governance emerges as a critical dimension. Governance structures can either facilitate the realization of the AU's health goals by promoting cooperation, transparency, and effective resource utilization, or they can pose barriers through inefficiency, corruption, and misallocation. Thus, the mediating role of governance serves as a linchpin within the broader narrative of African health development, connecting the AU's vision with the lives of individuals it seeks to impact.

1.2. Purpose of the Study, Research Aims, and Objectives

The purpose of this qualitative study was to explore the most significant health initiatives established by the African Union to fulfill its health mandate and use the study’s findings to improve healthcare services. The study critically examined the challenges and factors hindering

the AU's effective response to the 21st-century health needs in Africa, specifically focusing on the mediating role of governance. By conducting a comprehensive analysis, this study aimed to identify the systemic issues, policy gaps, and governance dynamics that have impeded the AU's success in addressing the health challenges faced by the African continent. Through a thorough investigation of the AU's initiatives, policies, and decision-making processes related to health, the research sought to uncover the root causes of the persistent health disparities in Africa. By highlighting the mediating role of governance, the study explored how institutional structures, leadership effectiveness, and policy implementation contribute to the AU's struggles in meeting the health needs of the diverse African populations. This was followed by an in-depth evaluation of secondary data to determine the extent to which the organization has fulfilled Africa's current health needs. The study addressed the influence of African governance on the AU fulfillment of the continent's health needs. Information obtained from the study helped identify ways in which the African Union can perform better. The AU's engagement with critical issues, such as refugee management and migration, is a key commendable achievement. The organization has worked to establish frameworks and policies that address the needs of displaced populations, offering assistance and protection to those fleeing conflicts and seeking better lives (Muma, 2018). The AU's efforts in this domain reflect its commitment to upholding the dignity and rights of all Africans, particularly those who are most vulnerable. However, the AU has also faced significant challenges and criticisms that cannot be ignored. One of the most poignant criticisms is that the AU has not consistently succeeded in meeting the needs of ordinary African citizens (Madise & Isike, 2020). While the organization has made strides in promoting peace and stability, translating these gains into tangible improvements in the daily lives of people has proven to be a complex

endeavor. Economic disparities, lack of access to basic services, and persistent poverty continue to plague many African countries, highlighting the need for more targeted development efforts (Abdel Ghafar, 2021). Besides, the AU has been criticized for alienating ordinary Africans from the decision-making process. This has led to feelings of disconnection and disillusionment among citizens who perceive the AU as distant from their concerns (Abdel Ghafar, 2021). The lack of effective channels for citizen participation and representation has resulted in a gap between the AU's initiatives and the lived realities of the people it serves.

Another significant drawback has been the AU's struggle to hold leaders accountable for their actions. The absence of consistent mechanisms to address issues of corruption, human rights abuses, and undemocratic practices has, at times, undermined the organization's credibility (Ntini, 2023). This has eroded trust among citizens who expect the AU to be a watchdog for good governance and accountability (Ntini, 2023). Embedded within the AU's foundational ethos is a commitment to promoting the well-being of all African citizens. The AU's vision aligns seamlessly with the broader objective of ensuring healthcare accessibility, quality, and equity across the continent (Sammut, 2021). By fostering dialogue, collaboration, and coordinated action among African nations, the AU aspires to amplify the collective voice of the continent on the global stage and enact policies that address the multifaceted health challenges it faces (Sammut, 2021). The AU's health trajectory is woven into the fabric of its aspirations, reflected in its policies, initiatives, and strategic partnerships. The establishment of institutions such as the African CDC underscores the AU's commitment to enhancing Africa's capacity to prevent, detect, and respond to health threats (Christoffels et al., 2023). Collaborative efforts to combat diseases like Ebola and strengthen healthcare infrastructure speak to the AU's role as a driving force behind continental

health security (Christoffels et al., 2023). However, amidst the AU's grand aspirations lies the intricate mediating factor of governance. Izugbara et al. (2020) explained that governance mechanisms, from the AU's own internal decision-making processes to the governance structures of member states, play a pivotal role in translating the AU's vision into tangible health outcomes. Izugbara et al. (2020) discussed that the alignment of national policies, the allocation of resources, and the coordination of efforts all hinge on the effectiveness of governance systems. Based on the existing literature, it becomes evident that the challenges and opportunities at hand require a comprehensive analysis that considers both macro-level strategies and micro-level implementations. By scrutinizing the strategies, policies, and collaborative efforts initiated by the African Union, this present study sought to illuminate the pathways that hold promise for addressing the health needs of a rapidly evolving continent. Moreover, by examining how governance mechanisms influence the implementation of these strategies, this study provided better insights into the complex realities that shape the effectiveness of healthcare interventions. This is because the study was driven by the conviction that a nuanced understanding of the interplay between the African Union, governance, and healthcare can illuminate strategies for enhancing health outcomes that are contextually sensitive and sustainable. The subsequent sections of this research delved into the specific dimensions of this relationship, considering case studies, policy analyses, and critical evaluations to demonstrate a comprehensive picture of the challenges, successes, and potential future trajectories. Through this exploration, the study aimed to contribute to the discourse on health governance in Africa and provide actionable insights for policymakers, researchers, and practitioners invested in realizing the vision of improved health for all Africans in the 21st century.

Also, at its core, this research study sought to undertake a comprehensive exploration of the intricate dynamics between the African Union's strategies and the attainment of 21st-century health goals in Africa. By closely examining how governance influences the implementation and effectiveness of health-related initiatives, the study intends to provide a nuanced understanding of the challenges and opportunities that shape health outcomes on the continent. By critically assessing the policies, collaborative endeavors, and interventions launched by the African Union, this research aspires to contribute vital insights that can inform evidence-based policy decisions, drive strategic reforms, and ultimately improve the well-being of African populations.

The current study aimed to investigate the African Union and its attainment of 21st-century health needs in Africa, with governance as the mediating factor. The study objectives were:

- To examine how health financing contributes to the 21st Century Health needs in Africa.
- To establish how Africa CDC contributes to the 21st Century health needs in Africa.
- To find out how access to safe, efficacious, and quality medicine contributes to the 21st Century health needs in Africa.
- To assess how supply of essential medicine contributes to the 21st Century health needs in Africa.
- To determine how Africa states governance contributes to the 21st Century health needs in Africa.

1.3. Nature and Significance of the Study

This research study adopted a qualitative grounded theory approach, which is a robust qualitative research methodology that seeks to generate theories grounded in empirical data, enabling the exploration of complex and dynamic phenomena within their natural context

(Wiesche et al., 2017). Thus, the study used a qualitative grounded theory as the appropriate design because it helped explore emerging themes in greater depth regarding the relationship between the AU and the attainment of 21st-century health needs in Africa.

Secondary data were systematically compared to uncover patterns and relationships. Themes were refined, and new insights emerged, leading to the development of significant themes to address research hypothesis and achieve the purpose and objectives of the study. Also, with a focus on secondary data, the study focused on theoretical sampling: The research employed theoretical sampling, selecting new data sources based on the emerging insights and gaps in the developing theory. This approach enriched the depth and complexity of the theory.

Also, this study's profound importance lies in addressing pressing health challenges, enhancing policy formulation, and fostering collaborative efforts to improve the well-being of African populations. The African continent grapples with a diverse range of health challenges, from infectious diseases to non-communicable ailments. These challenges transcend national borders and demand nuanced solutions. This study's exploration of the African Union's initiatives and governance's role can provide insights that inform targeted interventions, leading to more effective strategies for tackling these complex health issues.

The study may help advance scholarly understanding. By employing qualitative grounded theory, this study delves into the intricacies of the relationship between the AU's health initiatives, governance mechanisms, and health outcomes. It aims to contribute to the existing body of knowledge by generating contextually relevant insights that can enrich our understanding of the complex dynamics at play within the African health landscape. By delving into the nuanced relationship between the AU, governance, and health outcomes, this study contributes to the body

of knowledge in both international relations and health governance. The study's findings benefit fellow researchers by providing novel insights into the existing body of knowledge in international relations, health governance, and qualitative research methodologies. Researchers exploring similar interdisciplinary subjects can benefit from the nuanced understanding provided by this research, potentially inspiring new avenues of inquiry and contributing to the collective advancement of academic understanding. Researchers in the health sector can benefit from the insights into governance mechanisms and their impact on health outcomes. Understanding the intricacies of governance can be useful for researchers in the health sector as the findings inform them about the factors influencing the implementation of health policies, thereby enhancing their ability to navigate challenges and contribute to more effective healthcare delivery.

The study also benefits national and international policymakers: The findings of this research offered evidence-based insights that can guide the formulation of effective health policies at both national and international levels. Policymakers can leverage the recommendations derived from the study to make informed decisions, optimize resource allocation, and design initiatives that align with the specific health needs of diverse African populations.

The study also helped bridge the research gap. The research addresses a critical gap in the literature by focusing on the mediating influence of governance in the AU's pursuit of 21st-century health goals. By scrutinizing the role of governance in translating policy visions into tangible outcomes, this study offers a comprehensive analysis that provides valuable insights for both researchers and policymakers. Also, there exists a significant gap in understanding the intricate relationship between the African Union's health objectives, the effectiveness of its initiatives, and the influence of governance. This study filled this gap by unraveling the dynamics that shape health

outcomes, contributing vital insights to academic literature, policy debates, and practical implementation.

Besides, the study contributed significantly to informing evidence-based policies. The insights derived from this research have the potential to inform evidence-based policies, strategies, and interventions aimed at addressing Africa's health challenges. Policy decisions grounded in evidence are more likely to succeed. By dissecting the African Union's successes and failures in promoting health, as well as the role of governance in mediating outcomes, this research empowers policymakers with data-driven insights. This, in turn, enables the formulation of policies that are more responsive to the needs of African populations. By shedding light on the successes, failures, and dynamics of the AU's health initiatives, this study offered actionable recommendations that can guide decision-makers in formulating effective health policies. The insights derived from this research have the potential to serve as a compass for policy-makers and practitioners engaged in crafting health policies and strategies in Africa. The study's findings can inform the formulation of evidence-based policies that are grounded in a nuanced understanding of the AU's initiatives and the influence of governance. Policymakers, government officials, and international organizations can leverage the study's insights to make informed decisions that optimize the impact of health interventions. By understanding the role of governance in mediating health outcomes, these stakeholders can strategically allocate resources and design initiatives that are contextually relevant and effective.

At the core of this study's significance is its potential to positively impact the lives of millions of Africans. By shedding light on effective strategies and barriers to success, the findings of this study may help enhance African health development for improved health and wellbeing of

all people. The study's findings can contribute to enhancing health development efforts across the continent. By dissecting the role of governance in shaping health outcomes, the research equipped stakeholders with a deeper understanding of the levers that can accelerate progress toward improved health equity and access.

The study contributed to empowering collaborative endeavors. The study may hold the potential to foster collaboration between the AU, member states, international organizations, and non-state actors. By uncovering governance-related barriers and opportunities, the study can facilitate the alignment of efforts, resources, and strategies to collectively address Africa's health challenges.

International collaboration is essential for addressing transboundary health issues. Thus, this study's examination of the African Union's collaborative efforts can inspire greater cooperation between African nations, international organizations, and non-state actors, ultimately amplifying the impact of health initiatives. Also, the study's findings may facilitate the enhancement of health diplomacy efforts, strengthening collaborations between the AU and its member states, international partners, and non-state actors. By identifying areas of success and challenges, stakeholders can foster collaborative endeavors that amplify the impact of health initiatives. Health diplomacy relies on strategic engagement to address health challenges. Therefore, the study’s findings helped understand how governance shapes health outcomes and can enhance health diplomacy efforts, enabling negotiators to advocate for policies that are not only beneficial for individual countries but also contribute to the broader health and development goals of the continent.

The study’s findings may facilitate health system strengthening. The insights generated by this research can guide efforts to strengthen health systems across the continent. Understanding the governance dynamics that influence the implementation of health policies can catalyze reforms, improve resource allocation, and enhance the efficiency of health service delivery. The study’s findings may also facilitate health equity and access enhancement. The study's focus on governance and its impact on health equity can drive efforts to ensure equitable access to healthcare for marginalized populations. By uncovering barriers and opportunities within governance mechanisms, the research supported endeavors to bridge health disparities. Further, health systems' effectiveness is pivotal for improving health outcomes. This study's insights into the successes and failures of the African Union's interventions may guide the strengthening of health systems, ensuring they are better equipped to provide quality care and respond to health challenges.

Another significant contribution of the present study is global health insights. The study's implications extend beyond Africa's borders, contributing to the broader understanding of how governance influences health outcomes. The nuanced insights from this research can offer lessons and perspectives that resonate with global health challenges and the importance of effective governance.

The present study also guides future research. The qualitative grounded theory approach employed in this research can serve as a methodological model for future studies exploring the intricate relationships between organizations, governance, and health outcomes. The insights gained from this study's methodology can inspire researchers to delve into similar complex phenomena across diverse contexts. Also, this study's insights can guide future research endeavors,

serving as a foundation for deeper exploration of related topics. It can inspire scholars to delve further into the complex interplay between governance, international organizations, and health outcomes. The study's adoption of qualitative grounded theory provides a robust platform to unravel the multifaceted interactions between the AU, governance, and the pursuit of 21st-century health needs in Africa. By offering insights that are both contextually grounded and theoretically informed, this research aspired to contribute to the advancement of knowledge and the realization of more effective health strategies in Africa and beyond. Moreover, the study may be helpful for academic discourse enrichment. The study's methodology, employing qualitative grounded theory, enriches the methodological toolkit available for scholars and researchers examining complex phenomena. The insights gained from this study can inspire and guide future research in both qualitative methodology and African health governance.

In essence, this study's significance lies in its potential to ignite positive change within the African health landscape. By illuminating the intricacies of the AU's health initiatives, the role of governance, and their cumulative impact, the research may equip stakeholders with knowledge that can drive transformative reforms, foster collaboration, and improve the lives and well-being of African citizens. Through its scholarly rigor, methodological innovation, and actionable insights, this study strived to be a catalyst for advancing health development in Africa and contributing to the broader discourse on governance and health globally.

1.4. Research Questions

The primary goal of this study was to explore the African Union's attainment of 21st-century health needs in Africa using the mediating role of governance. This study seeks to understand the significant health initiatives established by the AU and evaluate their impact on

fulfilling the continent's current health needs. The study acknowledges that poor governance and unfavorable leadership styles in member countries can hinder the AU's fulfillment of its development goals. By delving into these dynamics, the research intends to identify avenues for the AU to enhance its performance.

From the specific objectives stated above, the below research questions were developed:

RQ1: How does health financing contribute to the 21st Century Health Needs in Africa?

RQ2: What contribution has CDC (Africa) to the 21st Century health needs in Africa?

RQ3: What influence has access to safe, efficacious, and quality medicine towards 21st Century health needs in Africa?

RQ4: Does the supply of essential medicine in the Continent contribute towards 21st Century health needs in Africa?

RQ5: How can Africa states governance contribute to the 21st Century health needs in Africa?

CHAPTER 2: LITERATURE

The primary goal of this study was to explore the African Union's attainment of 21st-century health needs in Africa using the mediating role of governance. Specifically, this study examined how various factors, including health financing, supply of essential medicine (EM), access to medicine, governance, and Africa Centers for Disease Control and Prevention (Africa CDC), impact health outcomes among African nations. The literature review chapter is aimed at giving the researcher a more comprehensive understanding of the topic under investigation, providing evidence of what other scholars have found about the phenomena being investigated, and outlining the existing research gap that the current study seeks to fill. The chapter is organized into several sections. The first section presents the theoretical framework and the industry field of study. Section two covers the impact of health financing on health outcomes. The following sections cover how the supply of essential medicine, access to medicine, governance, and Africa CDC impact health outcomes. Finally, a comprehensive summary of the entire chapter that highlights the key points.

An extensive literature search was done using reputable databases and sources to find relevant evidence for the literature review, which was obtained from peer-reviewed journal articles, approved thesis and dissertation articles, scholarly books, and seminal scholarly books. A quest was performed in various reputable databases, including Google Scholar, EBSCOHost, ProQuest, Emerald Insight, Science Direct, Sage Publications, and Research Gate, to obtain the literature review sources. Various search terms, including “health financing and health outcome,” “supply of essential medicine and health outcomes,” “access to medicine and health outcome,” “governance and health outcome,” and “Africa CDC and health outcomes,” were utilized to

explicitly identify related articles for review. Boolean operators, truncation, and wildcard systems were also utilized. Furthermore, bibliographies of the identified studies were also used to identify more literature review sources. English journal articles published in the past five years were reviewed, with the majority of the studies being published in the past five years to garner relevant and current information. The majority of the reviewed articles were quantitative studies.

2.1.Theoretical Review

Governance Models/Theories

One of the governance models that guided this study was the government-as-machine model adopted by the public sector in the early 20th century to combat corruption and arbitrary use of political influence. Based on this model, the government is considered a machine dominated by set rules, regulations, and standards of different kinds (Asaduzzaman, 2016; Mintzberg, 1996). This model was deemed suitable for guiding since governance was a significant variable for this study. Particularly, the study sought to determine AU's performance in the achievement of the 21st-century health needs in Africa, with the mediating role of governance. Thus, this model assisted the researcher in defining governance as their mediating variable. Based on the government-as-machine-model's definition of government, the researcher formulated the definition of governance in AU as any set rules, regulations, and standards governing AU's operations (Agar, 2003).

Another governance model that was ideal for guiding this study was the normative-control model. This model is concerned with values and norms rather than structure and systems. Based on this model, control is rooted in beliefs and values as opposed to structures. This study chose this model to give the researcher a more comprehensive understanding of the term governance, which was the researcher's moderating variable. According to Mintzberg (1996), in cases where

there is a concept of public service, the normative model helps keep the machine model functioning. With this being said, it was appropriate for the researcher to utilize both the machine model and normative control model to gain a comprehensive understanding of the AU governance. The normative model is characterized by five key elements: selection, socialization, guidance, responsibility, and judgment (Asaduzzaman, 2016). Selection means that people are selected based on their credentials as well as attitudes and values. On the other hand, socialization ensures that membership is dedicated to a cohesive social system. Guidance implies that guidance is by accepted principles as opposed to imposed plans and visions and not targets. This model, through its judgment elements, allowed the researcher to determine how the performance of AU could be assessed, which elucidates that performance is judged based on experience. Thus, the AU's performance in the achievement of 21st Century Health Needs in Africa can be judged based on the respondents' experiences as described during data collection.

The government-as-machine model and normative-control model provide structured frameworks for understanding governance within the AU context. However, these models oversimplify the complexities of governance dynamics within the AU, theoretically overlooking aspects of power dynamics, cultural influences, and stakeholder relationships. For instance, the government-as-machine model's focus on rules and regulations can disregard the role of informal networks and social norms in shaping governance practices. Additionally, the normative-control model's emphasis on values and norms may neglect the influence of structural factors and institutional arrangements on governance outcomes. Thus, while these models offer valuable insights, they did not fully capture the multifaceted nature of governance within the AU. Therefore, the grounded theory was appropriate because it allowed for a deeper exploration of these

complexities by acknowledging the use of empirical data or evidence over preconceived theoretical frameworks. By collecting data directly from selected member states, grounded theory helped uncover emergent themes, patterns, and relationships that may not align neatly with existing theories. This approach acknowledged the dynamic and context-specific nature of governance dynamics within the AU and allowed for the development of a theory or theories that are grounded in the lived experiences and perspectives of those involved.

Financing Theories

The financing theory chosen to form the theoretical underpinning of this study was the Pecking Order Theory (POT). This theory was developed by Myers (1984). According to this theory, there exists no optimal debt-to-equity ratio (Myers, 1984). Guizani (2020) further defines the POT as the managers' preferences for funding sources to cover their financial needs. The author further explains that managers prefer internal over external financing, and when external financing is necessary, they opt to fit the debt-to-equity ratio due to the lower information costs attributed to the debt issues. According to Agyei et al. (2020), the POT depends on the notion of asymmetric information between investors and mergers that acts as a guide for managers when choosing to raise finances. This implies that managers do not seek external financing if there is adequate internal financing. In relation to this theory, it can be understood that African nations seek AU financing and external financing when their internally generated funds are insufficient to cater to their 21st health needs. This theory was chosen to guide the researcher in understanding the concept of financing and help answer the first research question, which sought to determine how health financing contributes to the 21st Century Health Needs in Africa because La Rocca et al. (2011) argue that the pecking order theory is a valuable tool for analyzing the financing choices of a firm

based on the life cycle perspective. Besides, in a study to examine the theoretical predictions of the pecking order theory and Trade-off theory to better explain which of the theories relate to financing choices of small and medium enterprises (SMEs) within the African context, Agyei et al. (2020) established that SMEs' financing behavior closely relates to the POT predictions in the context of an emerging economy. Thus, this led to the researcher choosing this theory to guide as a theoretical underpinning of their study. Although this theory was chosen, it has been criticized on the grounds of its underlying suggestions and arguments. In his critic, Adedeji (1998) claimed that the POT's suggestion that it is the only internal funds shortage that motivates firms to raise funds externally is questionable as it does not consider other theories and the effects of institutional factors that may influence a firm's choice of financing instrument.

Another financing theory that would have been applicable to this study was the Capital Structure Irrelevance (CSI) theory. This theory was coined by Modigliani and Miller (1958) and has been regarded as the starting point of the capital structure modern theory (Yapa Abeywardhana, 2017). This theory would have applied to this study since financing was among the key variables under investigation. Specifically, the study sought to determine how health financing helps achieve the 21st Century Health needs within Africa countries. This theory is associated with three main propositions: the total market value of a company is independent of its capital structure, an increase in debt-equity ratio increases the cost of equity, and the total market value of a company is independent of its dividend policy (Ahmeti, 2015). Yapa Abeywardhana (2017) further reveals that the assumptions of CSI theory prove that there is no optimal debt-to-equity ratio, and the capital structure is not relevant to the wealth of the shareholders. This theory would have been very useful in explaining how the AU provides financing to different African

countries with different capital structures without putting into consideration the capital structure of these countries. However, this theory was not chosen for this study following the critics of Yapa Abeywardhana (2017). Notably, Yapa Abeywardhana states that this theory is based on unrealistic assumptions.

These financing theories offer valuable insights into financing decisions and capital structure management, especially in the context of African nations seeking funding for healthcare initiatives. However, the theories did not provide enough evidence on the intricate socio-economic and political factors that significantly influence financing decisions within these nations. While theories such as the Pecking Order Theory and Capital Structure Irrelevance theory provide frameworks for understanding financing dynamics, they did not fully take into considerations the complexities of health financing in Africa. Consequently, grounded theory served as a vital complement to these theories by offering a means to delve deeper into these complexities. The grounded theory facilitated a comprehensive exploration of the socio-economic and political factors influencing health financing decisions in Africa by collecting detailed information from the chosen Africa member states related to health financing processes. Through qualitative data collection methods, grounded theory guided in uncovering the complex nature of health financing practices in Africa. This approach helped identify and analyze the various factors shaping financing decisions, including corruption, donor dependencies, institutional capacity constraints, and political considerations. adopting grounded theory made it possible to develop a theory grounded in empirical evidence derived directly from the member states. This iterative and inductive approach allowed for the emergence of nuanced theories that capture the complex interplay of factors influencing health financing decisions and their impact on health outcomes.

Overall, grounded theory methodology provided a robust basis for exploring the intricacies of health financing in Africa and generating theories that reflect the realities of health financing practices on the continent.

Quality Theories

To be able to effectively answer the third research question, the researcher relied on quality theories, specifically the Juran Quality Trilogy. The Juran Quality Trilogy was presented in 1986 by Dr. Joseph M. Juran as a means of managing quality (Wheaton & Schrott, 2018). The first phase of the Juran Quality Trilogy emphasizes the importance of proactive planning to ensure that products or processes meet predetermined quality standards. Quality planning is a systematic procedure for developing processes and services that ensure that the needs of the customers are met (Tallentire et al., 2019). In the context of this study, this phase was seen as analogous to the African Union's strategic health planning initiatives. Before launching health interventions or policies, meticulous planning is required to set clear goals, define measurable outcomes, allocate resources effectively, and align with the broader vision of improving health in Africa.

The second phase of the trilogy revolves around the principle of quality control. This entails monitoring and evaluating processes to ensure that they adhere to the established quality standards. Quality control involves effective planning to ensure that the activity from the input process to the output is capable of providing quality dimensions in accordance with consumer expectations (Tejaningrum, 2019). The development stage implies that a firm must be capable of continuously improving the current and future quality dimensions (Tejaningrum, 2019). For this study, quality control was likened to the assessment and monitoring of the African Union's health initiatives. It involved measuring the effectiveness, efficiency, and equity of these initiatives in addressing 21st-

century health needs. By assessing the performance of health interventions against predefined benchmarks, stakeholders can identify successes, challenges, and areas for improvement. Notably, quality was a significant variable for the current study, where the study sought to determine how accessibility to efficacious, safe, and quality medicine contributes towards the achievement of 21st-century health needs in Africa. Therefore, this model provided the research with a deeper comprehension of the quality of medicine provided by the AU to help meet Africa's 21st-century health needs.

The third phase of the Juran Quality Trilogy emphasizes the continuous improvement of processes to enhance quality. In relation to quality improvement, the Juran Quality Trilogy is a renowned framework that provides a structured approach to achieving and sustaining improved product and process quality (Tejaningrum, 2019). Developed by renowned quality management expert Joseph M. Juran, this trilogy is applied in quality improvement to provide a strategic lens through which to analyze the African Union's efforts to attain 21st-century health needs in Africa. While the Juran Quality Trilogy is often applied in manufacturing and industrial contexts, its principles can be extrapolated to the realm of healthcare, including the pursuit of 21st-century health needs in Africa. In the context of the research, quality improvement helped address the evolving health challenges of the 21st century. Just as organizations strive to refine their processes to meet changing customer needs, health systems must adapt to emerging health issues. This phase involves analyzing data from quality control efforts to identify root causes of deficiencies, implementing corrective actions and continually optimizing health policies and interventions (Tejaningrum, 2019). It also underscores the significance of stakeholder engagement, as input from various actors contributes to the iterative improvement of health programs (Tejaningrum, 2019).

By aligning the three phases of the trilogy with the AU's health initiatives, governance structures, and health outcomes, this present study systematically evaluated the planning, implementation, and improvement aspects of health interventions. This framework encouraged a holistic approach that involves policymakers, healthcare professionals, and communities, fostering a collaborative effort to achieve sustainable improvements in health access, quality, and equity across the continent.

The Juran Quality Trilogy provides a structured approach for quality management in healthcare delivery, focusing on the proactive planning, quality control, and continuous improvement. While these principles are valuable, the theory did not fully discuss the unique challenges and contextual complexities essential in healthcare delivery within the African context. The dynamic socio-economic, cultural, and infrastructural landscape of Africa presents distinct challenges that cannot be adequately addressed by standardized quality management frameworks alone. Therefore, rounded theory was found appropriate and was particularly suitable to explore these challenges in depth by directly engaging with different members states in Africa. This Grounded theory facilitated an in-depth exploration of the challenges faced in delivering quality healthcare within Africa by collecting detailed information from each of the selected member states. Through qualitative data collection methods, grounded theory helped unearth the intricacies of healthcare delivery and identify barriers to quality care. These barriers may include resource constraints, inadequate infrastructure, cultural beliefs impacting healthcare-seeking behaviors, and disparities in access to care based on socio-economic factors.

Also, by collecting rich qualitative data, grounded theory helped develop theories that are grounded in the realities of healthcare practice in Africa. This bottom-up approach to theory

development ensured that theories are not abstract concepts imposed from outside, but rather emerge from those directly involved in healthcare delivery in Africa. Grounded theory thus provided a robust framework for understanding the complexities of healthcare delivery in Africa and developing contextually relevant strategies for improving the quality of care.

Distribution Theories

Distribution theories, specifically the Keynesian theory (John Maynard Keynes, 1936), were important in assisting the researcher in answering the fourth research question, which related to how the supply of essential medicine in the Continent contributes to 21st-century health needs in Africa. This theory was selected to provide the researcher with a deeper comprehension of medicine supply. The Keynesian theory states that aggregate demand influences economic output in the short run, especially during economic downturns. The theory is related to this study since it is the aggregate demand for medicine in African countries that influences the economic output of these countries and forces them to rely on AU to attain 21st century health needs. In his 1944 work, *The Road to Serfdom*, economist Friedrick Hayek criticized the Keynesian theory with an argument that the theory leans towards a centrally planned economy. However, even if the theory inclines towards a centrally planned economy, it was deemed appropriate for this study since the AU operations are also centrally planned. Additionally, in the context of research question two, the Keynesian theory provides a lens through which to analyze the role of government intervention, equitable distribution, and resource allocation. Keynesian theory also highlights the importance of effective resource allocation to maximize societal welfare. In the case of essential medicines, strategic resource allocation is paramount. Governments can allocate resources to establish well-functioning supply chains, improve distribution networks, and invest in healthcare infrastructure.

By doing so, they can ensure that essential medicines are available where needed, contributing to improved health outcomes and overall health system performance. By exploring how governments in Africa intervene to ensure the availability, affordability, and accessibility of essential medicines, you can assess how these efforts contribute to addressing health disparities and meeting the health needs of the continent's population. Additionally, the theory highlights the interconnectedness of economic policies, equitable distribution, and overall health outcomes in the pursuit of 21st-century health needs in Africa.

Another distribution theory that would have been applicable in helping the researcher address the fourth research question was the classical theory. This theory presents the economy as self-regulating, capable of producing the natural output level. When circumstances cause shortages or surpluses in the natural output, the existing self-adjustment mechanisms restore the economy to its natural level (Chaudhry et al., 2014). This theory was not adopted since Chaudhry et al. (2014) reveal that the proposition of classical theory that supply results in demand is not true since some income is saved rather than consumed, resulting in reduced demand. Critics of the classical theory by Keynes also led to this theory not being selected to guide this study. Notably, Keynes criticized the fundamental classical assumption of long- run equilibrium and attached more significance to the short-term equilibrium (Rosier, 2010). He stated that “in the long run, we are all dead,” thus it cannot be assumed that everything will be alright in the long run. Additionally, the Keynesian Theory was chosen over the classical theory since after comparing the two theories to determine which one is correct in understanding demand, (Chaudhry et al. (2014) found Keynesian theory to be more accurate.

The Keynesian theory and classical theory offer perspectives on economic policy and resource allocation, which are relevant to understanding the distribution of essential medicines in Africa. However, these theories overlook the role of governance structures, regulatory frameworks, and healthcare delivery systems in shaping medicine distribution practices. Therefore, they provide the basis to use grounded theory to allow for deeper analysis of these factors by exploring the experiences and perspectives of stakeholders involved in medicine distribution within Africa. By collecting qualitative data on supply chain management, regulatory compliance, and access barriers, grounded theory guided in developing a theory or theories that account for the complex interplay of economic, political, and social factors influencing medicine distribution. This approach ensured that theories are related to medicine distribution efforts in Africa continent.

While existing theories (government-as-machine model and normative-control model, Pecking Order Theory, Capital Structure Irrelevance (CSI) theory, the Juran Quality Trilogy, the Keynesian theory, and the classical theory) provide valuable insights into governance, financing, quality management, and distribution practices, they did not fully address the complexities of healthcare delivery in the African context. As such, grounded theory was helpful to the present study as it offered a means to explore these complexities in depth, drawing on the rich qualitative data collected from stakeholders in the field. By acknowledging empirical evidence over preconceived theoretical frameworks, grounded theory was suitable because it helped develop theories that are grounded in the healthcare delivery in Africa.

2.2. Conceptual Review

The field of study for this research is the healthcare sector in Africa. Research reveals that most African nations are not able to meet the basic requirements for good healthcare systems (Oleribe et al., 2019). According to the authors, the main reason why most of these countries do not have good healthcare systems is because of poor governance and human resources challenges. The financial barrier to healthcare services is another healthcare system challenges prevalent in Africa (Oleribe et al., 2019). As part of efforts to deal with the challenge of lack of financial risk protection mechanisms in African countries, some nations such as Kenya, Nigeria, Rwanda, Tanzania, Ethiopia, and Ghana have begun implementing social health insurance schemes (Fenny et al., 2018). Despite the efforts, most Africans still suffer financial barriers since out-of-pocket expenditure is needed before medical care can be provided.

The healthcare sector in the African continent plays a pivotal role in the overall well-being of the population, and research has brought to light a significant challenge: a considerable number of African nations struggle to establish and maintain effective healthcare systems that can provide their citizens with the necessary medical care and services. A study conducted by Oleribe et al. (2019) sheds light on the pressing issue of inadequate healthcare systems across Africa. The research underscores that numerous African countries are grappling with an inability to fulfill the fundamental prerequisites of a robust healthcare system. The repercussions of this deficiency are far-reaching and affect various aspects of society, from health outcomes to economic stability. One of the key findings highlighted by the authors is the link between poor governance and human resources challenges and the underdeveloped state of healthcare systems in many African nations (Oleribe et al., 2019). Governance issues, including corruption and mismanagement, can hinder

the efficient allocation of resources and the implementation of effective healthcare policies. Furthermore, inadequate human resources, such as healthcare professionals and skilled personnel, can severely limit the capacity to deliver quality medical services and respond to health crises promptly (Oleribe et al., 2019).

In addition to governance and human resources challenges, Oleribe et al. (2019) also highlighted the pervasive problem of financial barriers within African healthcare systems. The inability of citizens to access medical services due to financial constraints has been a longstanding issue. Oleribe et al. (2019) point out that many Africans face significant financial barriers to healthcare services, where individuals are required to pay out-of-pocket for medical care, often before receiving the necessary treatment. This financial burden can discourage people from seeking medical attention when needed, potentially leading to delayed treatment, exacerbated health conditions, and even preventable deaths.

Some nations have taken proactive steps to address the challenge of lacking financial risk protection mechanisms in African countries. Notably, countries such as Kenya, Nigeria, Rwanda, Tanzania, Ethiopia, and Ghana have begun implementing social health insurance schemes, as noted in research by Fenny et al. in 2018. These schemes aim to provide a safety net for citizens by pooling resources and spreading financial risks across the population. While these efforts are commendable, the authors point out that the implementation of social health insurance schemes is not without its challenges, including issues related to coverage, enrollment, and sustainability. However, despite the efforts made by these countries, the issue of financial barriers persists for many Africans. The need for out-of-pocket payments before receiving medical care remains a significant obstacle to accessing healthcare services. This situation can particularly impact

vulnerable populations, including low-income individuals and those living in remote or underserved areas. In conclusion, the research highlights the critical nature of the healthcare sector in Africa and draws attention to the challenges that hinder the establishment of effective healthcare systems across the continent. Addressing issues related to governance, human resources, and financial barriers is crucial to improving healthcare access and outcomes for African populations. While initiatives like social health insurance schemes have been initiated in several countries, sustained efforts are necessary to overcome these challenges and ensure that all individuals have equitable access to quality healthcare services.

Health Financing and Health Outcome

The administration of finances for medical resources is known as healthcare financing (Dieleman et al., 2018). Health financing is among the key functions of the health systems, which enhances the improvement of universal healthcare coverage through effective service coverage and financial protection. Health financing contains carefully designed and implemented policies of health financing in addressing healthcare issues. Contractual arrangements are made to promote enhanced quality healthcare and sufficient and timely transfer of monies to providers to provide appropriate personnel, as well as medications for treating patients, for the proper running of healthcare systems. The articles with respective findings that support health financing and health outcomes are summarized in the following Table 2.1.

Table 2.1

Summary Table on Health Financing and Health Outcomes

Author's Names/ Year of Publication	**Study Type**	**Key Findings**	**Implications**
Abass, 2016		The research identified notable variations across governorates and regions concerning socioeconomic factors, health conditions, health expenditure, and health outcomes. Specifically, the Upper Egypt region faces more pronounced challenges compared to other areas. While a link exists between government health expenditure and health outcomes, it's noteworthy that the existing expenditure pattern does not contribute significantly to better health outcomes. Moreover, Egypt's health financing system exhibits inefficiencies and inequalities that necessitate attention and reform.	The findings call for a comprehensive and strategic approach to healthcare policy and reform in Egypt. By addressing regional disparities, optimizing health expenditure patterns, and tackling inefficiencies, the country can work towards a more equitable, efficient, and effective healthcare system that ultimately improves the health and well-being of its citizens.
Akinci et al. 2014	Quantitative descriptive	The findings of the study, even after accounting for potential confounding factors, reveal significant and positive effects of both	In essence, these findings underline the transformative potential of increased healthcare spending on infant, under-five, and maternal

		government and private spending on healthcare within the Middle East and North Africa (MENA) region. These relationships have been established as causal in nature. Specifically, an increase of one percentage point in per capita government expenditures corresponds to a noteworthy reduction of 8.6 to 9.5 infant deaths per 1000 live births ($p<0.01$), a decrease of 10.3 to 12.1 under-five deaths per 1000 live births ($p<0.01$), and a decline of 26.0 to 26.3 maternal deaths per 100000 live births ($p<0.01$). Similarly, a rise of one percentage point in the log of per capita private expenditures corresponds to a reduction of 7.2 to 8.1 infant deaths per 1000 live births ($p<0.01$), a decrease of 9.5 to 9.8 under-five deaths per 1000 live births ($p<0.01$), and a drop of 25.8 to 25.9 maternal deaths per 100000 live births ($p<0.01$). These results emphasize the	mortality rates in the MENA region. By leveraging these implications, policymakers and stakeholders can shape more effective healthcare strategies and interventions that directly contribute to saving lives and enhancing public health.

		substantial impact that both government and private investments in healthcare can have on improving infant, under-five, and maternal mortality rates within the MENA region.	
Dieleman et al. 2018	Descriptive	Global health spending was projected to increase from US$10 trillion in 2015 to $20 trillion in 2040. Per capita health spending was projected to increase fastest in upper-middle-income countries per year, followed by lower-middle-income countries and low-income countries	There is increasing global consensus on UHC and its ability to improve population health outcomes in an equitable, sustainable manner.
Azodi et al. 2019		The study revealed that competence and organizational culture significantly influence the commitment.	The manager that the increase in employee competence and a suitable organizational culture is very important in strengthening their employee commitment.
Nwani et al., 2018	Quantitative descriptive	The findings of the study reveal several important associations. Firstly, it is evident that Public Expenditures on Health significantly and positively influence health outcomes within Nigeria. Conversely, environmental	The government is advised to maintain consistent resource allocation to the healthcare sector, as this has demonstrated positive effects on health outcomes. Additionally, proactive steps to improve environmental

		pollution, represented by per capita CO2 emissions, has a notable and negative impact on health outcomes in the country. Although the economic growth rate exerts a positive effect on health outcomes, its significance remains limited in enhancing life expectancy, which serves as a proxy for health outcomes in this context.	practices are crucial. This can be accomplished by introducing new national environmental policies and intensifying awareness campaigns. The utilization of community health extension workers could serve as an effective method for raising awareness about environmental concerns and fostering sustainable practices.
Opeloyeru et al. 2021	Quantitative descriptive	The results affirm the positive influence of high health expenditure originating from government, private, and external sources on health outcomes. This underscores the critical role of financial investment in healthcare in enhancing overall population health and well-being. The findings indicate that health expenditure sourced from out-of-pocket payments is associated with detrimental effects on health outcomes. This highlights the potential burden that direct	The findings imply that they provide a nuanced understanding of the complex interplay between health expenditure, environmental factors, and health outcomes. By leveraging these insights, policymakers, healthcare providers, and stakeholders can work toward more effective strategies that improve overall population health and well-being.

		payments for healthcare services can impose on individuals and their subsequent impact on health.	
Ogunjimi & Adebayo, 2018	Quantitative descriptive	The analysis revealed distinct causal relationships within the studied parameters. There was a unidirectional causal link originating from health expenditure and leading to changes in infant mortality. In contrast, no causality was identified between real GDP and infant mortality. Additionally, the study identified a unidirectional causal connection flowing from both health expenditure and real GDP towards variations in life expectancy and maternal mortality. Lastly, a unidirectional causal relationship emerged, originating from real GDP and influencing health expenditure. These findings underscore the intricate dynamics between health expenditure, economic factors, and key health indicators, shedding light on the nuanced interactions that	The findings imply that a strategic increase in funding holds the potential to facilitate more effective resource allocation, ultimately leading to improved health outcomes. Moreover, the integration of modern technology into healthcare practices is also encouraged, as it could further enhance the efficiency and effectiveness of healthcare services.

		influence these outcomes.	
Owumi & Alfred, 2021	Quantitative descriptive	Domestic general government health expenditure, out-of-pocket payments, and external health expenditure all displayed notable positive impacts on life expectancy in Nigeria. Specifically, with the influence of other factors held constant, a 1% rise in domestic general government health expenditure correlated with a 6% increase in life expectancy at birth in Nigeria. Likewise, a 1% increase in out-of-pocket health expenditure was associated with a substantial 63% enhancement in life expectancy. Furthermore, the study found that a 1% increase in external health expenditure contributed to an 11% improvement in life expectancy at birth.	The findings emphasize the complex interplay between healthcare financing and life expectancy, pointing towards the potential for targeted interventions to bring about positive changes in the health outcomes of Nigeria's population.
Raeesi et al. 2018	Quantitative descriptive	The study revealed a noteworthy correlation between health expenditures and health indicators. Interestingly, the impact of private health expenditures on health outcomes	The study implies the importance of tailoring healthcare financing strategies to specific healthcare system models, as well as the need to strike a balance between private and

		exhibited a greater influence in countries characterized by mixed health financing systems and traditional sickness fund insurance, as compared to public expenditures. Moreover, upon juxtaposing the outcomes across various healthcare systems, it was evident that the effect of health expenditure on health outcomes was most pronounced in countries with a national health system (NHS), surpassing the effects observed in other healthcare system models.	public investments. By leveraging these implications, policymakers can make informed decisions to improve health outcomes, accessibility, and equity in healthcare delivery.
Sparkes et al., 2019	Literature review	Issues related to the fragmentation of financing, spanning the health sector, various sectors, and governmental levels, are significant constraints. Coordinating and incentivizing investments across governmental tiers further contributes to overcoming fragmentation, promoting a more integrated and efficient system of	Effectively addressing these challenges involves pooling funds and consolidating governance structures to streamline functions across programs. Additionally, aligning budgets with efficient delivery strategies enables cross-sectoral approaches and bolsters accountability structures.

		resource allocation and governance.	
Syed & Jabeen, 2019	Quantitative Descriptive	The research findings indicated substantial advancements in tackling health-related Millennium Development Goals (MDGs), although these accomplishments fall short of the set targets. Both total health expenditure and per capita health spending are lower in comparison to other middle-income nations and the worldwide average. Additionally, the proportion of government healthcare expenditure to the total government outlay also remains below the intended target. Donor funding and out-of-pocket health expenses surpass the recommended limits proposed by the World Health Organization (WHO). Initiatives like private medical insurance and social insurance schemes are still at their preliminary stages of establishment. Moreover, disparities	The study calls for a comprehensive approach to healthcare improvement. By addressing resource allocation, policy refinement, insurance schemes, and regional disparities, stakeholders can collectively work towards strengthening healthcare systems, enhancing outcomes, and ensuring accessible and equitable healthcare for all.

		in healthcare provisions across different regions persist, underscoring existing regional inequalities.	
Weibo & Yimer, 2019	Quantitative Descriptive	Enhanced healthcare spending has been linked to noteworthy enhancements in vital health metrics across Sub-Saharan Africa. Specifically, an increase in life expectancy and reductions in indicators such as infant mortality, under-five mortality, and crude death rates have been observed. Parameters such as Gross Domestic Product (GDP) per capita, urbanization, immunization coverage, and access to basic drinking water have all shown positive effects on life expectancy and concurrent reductions in infant mortality, under-five mortality, and crude death rates.	The findings of this study imply the significance of healthcare expenditure as a pivotal determinant in achieving enhanced health outcomes across Sub-Saharan African countries. Consequently, a heightened allocation of resources towards the health sector directly contributes to the improvement of overall health status. Moreover, a strategic reformulation of policies aimed at bolstering the Gross Domestic Product (GDP) per capita, advancing immunization coverage, promoting urbanization, and ensuring access to fundamental drinking water services can be instrumental in further elevating health outcomes.

Supply of Essential Medicines and Health Outcomes

The essential medicines concept emerged during the military tradition whereby soldiers needed to carry therapeutic supplies into the combat zones. It was applied to rationalize the therapeutic requirements during the war (Duong et al., 2015). A list of Essential Medicines (EMs) was introduced in 1977 by the WHO, comprising 186 pharmaceuticals considered essential for managing disease burden and meeting a population's health needs (Duong et al., 2015). EMs refer to medicines that satisfy a population's priority healthcare-related needs (Kar et al., 2010). According to the authors, essential medicines are chosen to owe to their evidence of safety and efficacy, public health relevance, and relative cost-effectiveness. Research reveals that approximately two billion people worldwide lack access to the essential medicine (Ozawa et al., 2019). Stevens and Huys (2017) further reveal that access to medicine is a global issue of concern. According to the authors, the cost of most medications, including vaccines, drugs, and diagnostics, is not affordable to most people in need, especially in less developed countries, and is also affecting middle-income nations. Thus, it can be concluded that essential medicines are inaccessible, unavailable, unaffordable, unacceptable, and/or of low quality for most people across the globe.

Roth et al. (2018) undertook research whose goal was to expand the global access to essential medicines. Mainly, the researchers sought to explore the investment priorities for sustainability that strengthen the regulatory system of medical products. The study involved a review of secondary regulatory documents and resources. The researchers also betrothed with their worldwide partners and stakeholders' networks to pinpoint three major problems faced by the Low and Middle Incomes Countries (LIMCs) and National regulatory authorities (NRAs) that obstruct the exposure to and response to essential medicine (EM) and to restrain access to medical

equipment. The results of the study uncovered several barriers that hamper access to EM across the world. These obstacles include limited access to new and quality medical instruments on time, the implementation of regulatory practices that best make use of the available resources, and little evidence-based data that can be used to back up post-marketing activities. Further, the authors established different ways of dealing with these challenges. They include utilizing risk-based approaches to reinforce registration efficacy and timeliness, advancing and leveraging convergence and reliance initiatives, strengthening the regulatory management of the manufacturing disparities, and sustainability institutionalization. The researchers concluded that these solutions if technically implemented, well-financed, and supported, can lead to stronger health systems. A summary table of other studies that discussed the supply of essential medicine and health outcomes is presented in the following Table 2.2.

Table 2.2

Supply of Essential Medicines and Health Outcomes

Author's Names/ Year of Publication	**Study Type**	**Key Findings**	**Implications**
Abass, 2016		The research identified notable variations across governorates and regions concerning socioeconomic factors, health conditions, health expenditure, and health outcomes. Specifically, the Upper Egypt region faces more pronounced challenges compared to other areas. While a link exists between government health	The findings call for a comprehensive and strategic approach to healthcare policy and reform in Egypt. By addressing regional disparities, optimizing health expenditure patterns, and tackling inefficiencies, the country can work towards a more equitable, efficient, and effective healthcare system

		expenditure and health outcomes, it's noteworthy that the existing expenditure pattern does not contribute significantly to better health outcomes. Moreover, Egypt's health financing system exhibits inefficiencies and inequalities that necessitate attention and reform.	that ultimately improves the health and well-being of its citizens.
Armstrong-Hough et al. (2018)		The findings established a significant relationship between the availability of EM for treating non-communicable diseases and facility type, region, range of HIV services, and the managing authority. Based on the findings, the EM for treating non-communicable conditions for the for-profit healthcare facilities was 98% more than for the public healthcare facilities. Besides, the general hospitals and referral health care centers had 98% and 105% higher counts, respectively, than the primary healthcare institutions. Furthermore, the healthcare facilities in	The findings were useful in identifying gaps and guiding the distribution of limited resources. The elements of the study mentioned above form the basis for the current study, which examines the impacts of the global supply of EM medicine as it focuses on a similar area of study.

		the East and West of Uganda had a significantly lower count than those in the capital region.	
Armstrong-Hough et al. (2020)	Quantitative prospective, descriptive	The presence of medicines exhibited significant fluctuations over time, particularly in public healthcare facilities. In private-for-profit establishments, the price of identical medicines displayed varying levels of inconsistency on a weekly basis. Conversely, private-not-for-profit facilities encountered comparatively minor fluctuations in pricing.	The findings suggest a complex landscape of medicine availability and pricing fluctuations, with potential implications for patient access, affordability, and healthcare quality. The observed disparities emphasize the importance of addressing these issues through regulatory measures, supply chain improvements, and efforts to ensure equitable healthcare provision.
Awucha et al. (2020)	Quantitative descriptive	The findings demonstrated that among respondents managing chronic illnesses, a notable 35.2% encountered challenges in obtaining essential medicines during the COVID-19 lockdown period. This difficulty in accessing medicines resulted in 84.0% of these individuals experiencing a decline in their chronic health conditions. Notably, the percentage of	The findings emphasize the importance of maintaining healthcare access, affordability, and resilience during crises. Addressing challenges related to medicine access, cost, and income disruption is crucial to safeguarding the health and well-being of individuals with chronic illnesses in times of emergencies.

		respondents who relied on orthodox medicines prior to the COVID-19 lockdown (98.4%) was significantly higher (P < 0.05) than those who continued to rely on the same during the lockdown (89.0%). A substantial majority (77.7%) of participants noted an increase in the cost of medicines. Additionally, the pandemic's impact was evident on respondents' income, as 73.9% of those living with chronic illnesses reported a negative effect on their income due to the pandemic.	
Bazargani et al. (2014)	Quantitative descriptive	The availability of essential medicines was found to be less than optimal across all sectors and product types, with a median of 61.5% (interquartile range 20.6%–86.7%). This was notably higher than the availability of non-essential medicines, which stood at 27.3% (interquartile range 3.6%–70.0%). In terms of sectors, the median availability of essential medicines was 40.0% in the public sector and	The study's findings reveal significant disparities in the availability of essential medicines across sectors and income levels. These findings call for proactive measures to address these gaps and ensure equitable access to vital treatments, with implications for healthcare policy, resource allocation, and healthcare system design.

		78.1% in the private sector, while for non-essential medicines, it was 6.6% and 57.1%, respectively. Additionally, there was an inverse correlation between national income levels and the availability of essential medicines in the public sector.	
Bosu et al. (2013)	Review	The study findings revealed that 80% of the NCDs can be prevented through adjustments of the living styles. The study recommended the development of the primary healthcare level, local involvement in the prevention mechanisms, and increased use of screening programs, among others. The conclusion claimed the contribution of the NCDs to the disease burdens, development issues caused by the NCDs, and lack of awareness caused by the failure of the national response.	The findings emphasize the need for a comprehensive approach to tackling NCDs, focusing on prevention, healthcare infrastructure, community engagement, and awareness campaigns. Prioritizing these aspects can lead to improved public health outcomes, reduced disease burdens, and enhanced overall well-being.
Brenner et al. (2001)	Randomized, double-blind	Diabetic nephropathy is the leading cause of end-stage renal disease. The	The research's implications concerning the use of losartan for diabetic

		researchers assessed the role of the angiotensin-II-receptor antagonist losartan in patients with type 2 diabetes and nephropathy. Therefore, the	nephropathy underscore the importance of consistent access to essential medicines. Ensuring availability, affordability, and patient adherence to such medications directly influence health outcomes, disease management, and overall quality of life for individuals with chronic conditions.
Chen et al. (2010)	Quantitative prospective	From the research process through the survey method, the findings revealed only 62% in Shandong and 50% had licenses to produce and supply essential medicines. The study developed an argument that the manufacturers, the retail pharmacies, and the hospital pharmacies showed minimal responses to the decisions made by China National Essential Medicines List (NEML) 2004 on the manufacturing, purchases, and stocking of essential medicines. Therefore, more strategies are required to be put in place in developing countries in order to	The research findings emphasize the need for improved alignment, awareness, and collaboration among pharmaceutical stakeholders to ensure effective policy implementation and affordable access to essential medicines. The implications extend to regulatory frameworks, supply chain management, and global efforts to enhance healthcare access in developing countries.

		improve affordable access to essential medicines across the developing countries in the world.	
Chow et al. (2020)	Quantitative prospective	According to the findings, there were 93,200 people with a high Cardiovascular disease (CVD) risk among the 163 466 individuals from the twenty-one nations studied. As a result, 44.9% came from group one, 29.4% from group two, and 25.7% from group three, according to the figures. As a result of the study findings, the risk associated with heart disease was high among the respondents in groups 2 and 3. According to the study, the lack of available medicines and the increased cost of key CVD drugs were linked to a greater risk of MACEs and death	The findings highlight the significant CVD risk in the studied population, especially in certain groups, and emphasize the role of medication availability and cost in influencing health outcomes. This underscores the importance of tailored interventions, healthcare policy adjustments, and equitable access to essential medications in preventing adverse cardiovascular events and improving overall patient well-being.
Guerrero (2013)	Quantitative descriptive	Health insurance coverage and the quality of care are regarded as the improvement of access for and retention of racial and ethnic minority groups in healthcare. The study argues that	The healthcare reforms require public intervention and enhanced competence in the healthcare systems.

		the role of community-based financial and cultural practices is to improve accessibility and treatment adherence in the community.	
Haque et al. (2017)	Review	The study showed that a limited number of essential medicines promoted better medication supply and ensured better procurement policies at reduced costs. Hence, the principles helped in safeguarding as well as improving the distribution and dispensation of the medicine.	The selection of the medicine from the essential medicines formed the first step for the rational usage of the drug, progress, and ensuring the quality of the healthcare systems. The study recommended that sufficient dosage should be applied to each individual for the correct time. Effective treatment requires clear information and at a reduced price.
McBain et al. (2012)	Quantitative cross-sectional	The availability and affordability of medication impacted the criteria used to measure economic progress, such as the Human Development Index. As a consequence of the study's findings, they enhanced specific aspects of mental issues on the psychotropic drugs and general development owing to affordability.	The study suggests that the affordability of medications has broader implications for general development. When medications are affordable, households are less likely to face financial strain due to healthcare expenses. This can lead to increased disposable income that can be allocated to education, housing,

			and other basic needs. Consequently, improved affordability can contribute to overall human development by enhancing the quality of life and well-being of individuals and families.
Morgan et al. (2017)	Quantitative cross-sectional	the findings show that, on average, the ratio of registration fees to the GDP was high in Europe and North America while lowest in South and Central America. Health care needs in the above-mentioned regions are attributed to the emergence of geographic isolation, low socioeconomic status, higher rates of health risk behaviors, limited access to healthcare providers, and few job opportunities. Hence, the findings show that the regulatory fees charged by the medicines regulatory authority are proportional to the market size in the corresponding jurisdictions.	The higher registration fees relative to GDP in Europe and North America could suggest that the cost of medication regulation is more burdensome in these regions. This might have implications for healthcare costs and accessibility. Higher regulatory fees could potentially lead to increased medication prices, making essential medicines less affordable for individuals with lower socioeconomic status, particularly in regions where access to healthcare is already limited. This might result in health disparities, as people with lower income levels might struggle to access necessary medications.
Rivas et al. (2011)	Quantitative descriptive	The study results showed a wide	The healthcare system in Mexico is

		difference between the essential national lists and the institutional lists, especially in the group for the treatment of endocrinology, oncology, and infectious conditions. Also, the therapeutic groups examined between the institutions reported more than a 50% gap. Therefore, the researchers recommend significant opportunities for improvement of the national and institutional essential medicines list because it does not seem to correspond to the criteria of selection.	attributed to inadequate financing in order to meet the needs of the people, thereby increasing the prevalence of non-communicable diseases like diabetes, obesity, heart disease, and cancer. Therefore, the study was helpful since it provides the current research with reliable sites for data sources and reports from the comparisons of the healthcare institutions.
Song et al. (2018)	Quantitative descriptive	The study findings reveal that the market prices of essential medicines greatly reduced in China after the establishment of the National Essential Medicine System (NEMS), and the affordability of the medicine increased. On the other hand, current medicine prices are high compared to the	The findings suggest that regulatory interventions like the NEMS can positively impact medicine affordability, but further efforts are needed to ensure equitable access to essential medicines. Addressing price disparities and refining policies are essential steps toward achieving accessible

		international prices; thus, the study recommended future policies needed to target the availability of medicine and its affordability.	and affordable healthcare for all.
Stevens & Huys (2017)	Review	The cost of most medications, including vaccines, drugs, and diagnostics, is not affordable to most people in need, especially in less developed countries, and is also affecting middle-income nations. Thus, essential medicines are inaccessible, unavailable, unaffordable, unacceptable, and/or of low quality for most people across the globe.	The global issue of inaccessible and unaffordable essential medicines requires a multifaceted and coordinated response. Addressing these challenges is vital for achieving better health outcomes, reducing inequalities, and promoting sustainable development worldwide.
Yang et al. (2017)	Quantitative descriptive	The study found that the revised distribution method has not led to enhanced delivery of vital medicines to primary care facilities. Instead, our findings reveal a significant decline of 7.78 to 19.85 percentage points ($p < 0.01$) in distribution rates to rural primary care institutions. Similarly, when examining received	The findings imply the need for a critical review of the current distribution arrangement, with a focus on addressing disparities, optimizing resource allocation, and ensuring that healthcare services, especially in rural areas, are not compromised due to distribution challenges.

		rates as an indicator, we observed a corresponding reduction of 7.89 to 19.65 percentage points ($p < 0.01$).	
Kefale & Shebo (2019)	Quantitative descriptive	The study revealed that the overall mean availability of therapeutic drugs (TDs) on the survey day stood at 76.3%. The mean duration of stockouts for TDs in the past 12 months per healthcare center was 40.6 days. When examining specific TDs at healthcare centers, oral rehydrating salt experienced stockouts for 144 days, while paracetamol encountered only 1.4 days of stockouts. The variance between the actual count of TDs and the recorded count on the bin card, where the physical inventory is less than the bin card balance, ranged from 0% to 33.3%.	The findings underline the need for a proactive approach to addressing drug shortages, streamlining inventory management, and strengthening supply chains. By doing so, healthcare systems can ensure reliable access to essential medications and deliver higher-quality care to patients.
Lubinga et al. (2014)	Quantitative perspective	Ensuring global access to vital medications is crucial for enhancing well-being and saving lives, especially within low- and middle-income	The information provided underscores the importance of having a skilled pharmacy workforce to ensure access to essential medicines, especially in

		nations. The presence of proficient pharmacy professionals to oversee the distribution process and accurately administer medications is pivotal in guaranteeing the prompt availability of reliable pharmaceuticals and enhancing the health of children.	countries with limited resources. This has implications for overall public health, child health, and the optimization of healthcare systems in resource-constrained settings.
Zimlichman et al. (2013)		The findings reveal the cost estimates for various healthcare-associated infections (HAIs). Central line-associated bloodstream infections were the most expensive at $45,814, followed by ventilator-associated pneumonia at $40,144, surgical site infections at $20,785, Clostridium difficile infection at $11,285, and catheter-associated urinary tract infections at $896. The cumulative annual cost for these major infections was approximately $9.8 billion. Surgical site infections contributed the most to overall costs (33.7%), followed by ventilator-associated	The cost estimates of various healthcare-associated infections highlight the significance of preventing these infections through strategic measures, including access to essential medicines, improved infection control practices, and resource allocation. Addressing these issues can lead to improved patient outcomes, reduced healthcare costs, and a more efficient healthcare system overall.

	pneumonia (31.6%), central line-associated bloodstream infections (18.9%), C difficile infections (15.4%), and catheter-associated urinary tract infections (<1%).

From the reviewed studies, essentials should be available within health systems and should be in the proper dosage forms and with assured quality and sufficient information. This can result in positive health outcomes. Based on the findings presented in Table 2, it can be logically concluded that a lack of global supply of EM results in poor health outcomes, which may impact the worldwide supply of EM on the health outcomes of the African nations in the 21st century.

Access to Medicine in African Countries and Health Outcomes

Africa ranks at the top regarding the prevalence of both communicable and non-communicable diseases (World Health Organization [WHO] Africa, 2021). More than 90% of global malaria deaths occur in Africa. Additionally, over 70% of the people living with HIV/Aids are also within the African continent, signifying the continent's need for medication and its utilization. However, Africa is the most minor producer of medications, accounting for only 3% of the medicine manufactured worldwide. As a result, almost all the medicines used in Africa are imported, indicating the continent’s vulnerability in the event of pandemics or discontinued importation chains (WHO Africa, 2021). This section of the literature discusses the concepts of access to medication and the actual state of affairs regarding access to medicine in Africa.

The Concept of Access to Medicine

Access to medicine is a term used to mean that individuals have the right quality medicine at the right place at the right time (Wirtz et al., 2016). Pheage (2017) further defines access to medicine as having continuous access to medicine at an affordable price. Access to medicine is a multidimensional problem that can be considered from the view of increasing costs of new medicines and continuing challenges of shortages of medicines. Usually, access to medicines within health systems comprises five dimensions, including accessibility - graphical availability, availability, acceptability, quality, and affordability (Ozawa et al., 2019). Additionally, the general concept of access to medicines interrelates with the four elements: availability, accessibility, acceptability, and quality. Accessibility applies to access in terms of physical location, information regarding the medication, and affordability.

Accessibility, also known as geographical availability, refers to access to a health provider, institution, or service. It can also be defined as the ease of opportunity with which communities or consumers can use proper services that match their needs (Levesque et al., 2013). On the other hand, affordability as an element of access to health reflects the economic capacity of individuals to utilize resources and time to make use of appropriate health services. Access to health means that health services can be reached physically promptly.

Lastly, acceptability is concerned with the social and cultural factors that define the probability of people accepting the elements of the services and the judged appropriateness for the people to seek health care (Levesque et al., 2013). For instance, a society that prohibits physical contact between unmarried women and men may reduce the acceptability of care and the acceptability to seek care for women in cases where the health care providers are men. Research reveals that medicine availability is suboptimal in (low- and middle-income countries) LMICs

(Sieleunou et al., 2019). According to Orubu et al. (2019), limited affordability and availability of medicine in LMICs can be attributed to limited insurance coverage.

Access to medication is a human right and is especially fundamental to the full realization of the right to health (United Nations (UN), 2021). Receipt of medical care for the treatment or prevention of diseases is mainly dependent on the timeliness of access to appropriate and quality medicines. The lack of access to essential medication is primarily due to various obstacles that block medication access and the affordability and availability of quality medications, especially in developing and underdeveloped countries. The inability to access and afford quality medicines challenges human dignity and their right to life and health, which are at the core of all fundamental human rights (UN, 2021).

Therefore, access to medicine is an indicator of equality and the lack of challenge to the human rights perspectives related to equality and discrimination. There is a need to acknowledge the relationship between poverty and access to health, especially in developing countries, where access to medicine may be hindered by poverty. The links deepen with the realization that developing countries, like is the case with Africa, have the most need for medication and the most limited access to medication, hence the overall challenge in the right to health and right to life (UN, 2021).

Inaccessibility to medicine is one of the most significant hindrances to better health. Besides affordability and accessibility, gaps in local health systems and government infrastructures are substantial contributors to the lack of access to medicines for many people (Levesque et al., 2013). Different government systems and policies related to procurement practices, supply chain systems, and taxation policies influence the supply of medication to those who need it.

Additionally, government regulation systems related to drug regulatory authorities impact the safety and quality of drugs accessed by the population (UN, 2017). The government regulations on supply chain management are also indicators of the quality of medication accessed by its citizens, and the same for international drug control systems, which may hinder access in a given country.

Therefore, the government plays an essential role in facilitating and hindering access to medicines for its citizens and control systems for ensuring quality and safety. Governments are obligated to enhance access to medication while preventing abuse, diversion, and substandard trafficking (Sillo et al., 2020). Some medicines may be helpful for specific patient illnesses but compromise the population's safety due to addiction if their supply is not controlled. For example, narcotics used for pain management and other drugs for treating mental disorders are necessary for the patients who need them. Still, their uncontrolled access may lead to more negative consequences, such as public health crises resulting from abuse and addiction.

Unfortunately, the need to prevent abuse of pharmacological drugs has garnered more attention than the necessity to ensure medication availability for medical care (UN, 2021). Accordingly, up to 80% of the world's population is estimated to live in countries with zero or very little access to controlled pain management medication. The other 20% live in countries where access to these pain management medications has been overshadowed by the misuse and addiction crises. As a result, improving medication access is a complicated concept intertwined with economic power, governance, and health systems. Regarding economic power, the individual's, as well as the country's situation, matters as they affect affordability and manufacturing or purchasing ability (UN, 2021).

An estimated 90% of the global population pays for medication using out-of-pocket payments, which hinders affordability when individuals choose between medicines and something else (UN, 2021). Without any form of social protection, such as that provided by health insurance, patients are likely to opt for low-cost generic medication, which turns out to be a heavy financial burden in the long run (Levesque et al., 2013). Additionally, the country's purchasing power affects the quality of medication imported or produced, even if it were to be issued to the patients for free. For (LMICs), their spending on medication amounts to 20% to 60%, and their economic power influences the quality of medicines available to their citizens (UN, 2017). Additionally, pharmaceutical production and manufacturing is a capital-intensive business that requires extensive research and is greatly influenced by the country's economic power. Conversely, pharmaceutical companies are profit-driven; hence, their concentration and market target are highly dictated by the regions' economic capability. Therefore, economic ability influences medication access from the manufacturing location to the target market, and lastly, access and the quality of products accessed (Fozley, 2010).

It is an acknowledged fact that economic power often translates to political power. With economic power greatly influencing access to medication, underdeveloped and developing nations have challenges in their citizens' access to medication (Fozley, 2010). In addition, the political systems in these countries also lack control over the previously discussed factors, such as supply chain and drug control systems, hence leaving gaps related to the quality and safety of the medication accessed. Therefore, improving access to medicines may involve far more than just providing the necessary funds; it may also involve political factors such as policy reforms. According to the WHO, improving access to medicine involves various interventions tied to the

political and health systems (UN, 2017). Simultaneous improvements in health financing, health information access, governance related to medicine, and building the interconnections between the systems may play a role in improving access to drugs.

The State of Africa's Access to Medicine

Most African countries face limited access to medicine. Every year, the lack of access to drugs contributes to untold suffering and millions of deaths in Africa (Quick et al., 2005). Roughly 1.6 million Africans succumbed to tuberculosis, malaria, and HIV-related diseases in 2015 owing to a lack of access to medicine (Pheage, 2017). According to Quick et al. (2005), these diseases are treatable or preventable with timely access to affordable and appropriate medicines or vaccines. The burden of lack of access to medicine mainly falls on the disadvantaged groups, including the poor, children, and women. For example, 50% of children under five years die of tuberculosis, measles, malaria, pneumonia, and diarrhea (Pheage, 2017).

According to Pheage (2017), only 2% of the drugs taken in Africa are manufactured in the continent. Therefore, this implies that although most Africans do not have access to medicines. The economic state of African countries also contributes to the African's limited access to medicine. The reported lack of access to medicine makes Africans vulnerable to the three major killer diseases in the world: Malaria, tuberculosis, and HIV/AIDs (Pheage, 2017).

The Disease Burden in Africa

In 2015, approximately 1.6 million deaths occurred in Africa due to malaria, tuberculosis, and HIV/AIDs and their complications, a number that has continued to increase since (UN, 2017). Currently, Africa accounts for over 75% of all HIV/AIDS-related deaths and 90% of all malaria deaths (Sillo et al., 2020). In addition to the three major killer diseases whose prevalence in Africa

totals more than three-quarters of worldwide, 50% of children's deaths related to pneumonia and diarrhea are also African. Africa, therefore, has the highest disease burden of any continent and accounts for more deaths than the other continents combined. This is despite the diseases being able to be prevented entirely or treated (UN, 2017).

However, timely access to medicine and affordability of treatment and vaccines is a significant barrier to addressing the disease burden in the continent, with only 2% of the medication consumed being produced in Africa. As a result, many sick patients do not have access to locally produced medicine, nor do they have the resources to afford essential quality drugs (UN, 2017). In addition, there is also an urgent need for improved access to quality medicines for treating and managing non-communicable diseases such as diabetes, cancer, and cardiovascular diseases, which are predicted to overtake infectious diseases as the leading causes of death in Africa by 2030 (Sillo et al., 2020).

Medicine expenditure is a significant concern across all countries (Godman et al., 2018). Changes in population demographics and lifestyles are substantial contributors to increased disease burden, hence medicine use and expenditure. Notably, for low and middle-income countries in Africa, the cost of medications accounts for up to 70% of the total healthcare expenditure (Godman et al., 2018). The increasing prevalence of non-communicable diseases (NCDs) such as diabetes and hypertension in Africa is one of the great contributors to the rising medical costs. In addition, the increase in NCDs in low and middle-income African countries also interferes with previous funding for medicines related to cancer and other immune diseases. Priorities for research and treatment funding are influenced by disease prevalence. Africa continues to experience lifestyle

changes and prevalence of NCDs. Thus, the disease burden and medication expenditure are expected to increase as newer disease burdens emerge (Godman et al., 2018).

Access to Medicines in Africa

A report by the Africa Renewal Centre in the UN (2017) indicated that some parts of Africa use painkillers as 'treat-it-all' drugs in public hospitals due to the lack of medicine. The inquiry stated that access to medication, especially in public hospitals, was a challenge even for Africa's most economically empowered nations, such as South Africa. An interviewee from the country indicated that it is common practice to inform patients there is no medication available in the hospital and refer them to more prominent hospitals or pharmacies to purchase the required medication. These experiences are associated with poverty among many patients, which is the primary driver of preventing access to public health systems, and the patients are likely not to afford to purchase their medication out of their pockets. As a result, patients forgo the recommended medication, often going for cheaper generic alternatives or not accessing the drugs at all (UN, 2017).

An estimated US$30 billion is spent on substandard or counterfeit medication across Africa (African Union (AU), 2020). Such huge spending indicates that most of the medications used in Africa are either substandard or counterfeit, which significantly increases the public health risk associated with their consumption and disease morbidity and mortality. The African Continental Free Trade Area (AfCFTA) is proposed to facilitate an integrated trading area for Africa, allowing global, which will make Africa the most extensive integrated international trading area, allowing market access without additional tariffs. Africa's population of 1.2 billion people can benefit from

the integration of marketplaces, especially in regard to medication access, further promoting the continent's public healthcare systems. The integration of marketplaces is also expected to protect Africa's population from substandard and counterfeit productions, including medications and healthcare services (AU, 2020).

In the efforts to contain the spread of COVID-19, access to medicines was the least priority for the majority of African nations. With Africa's dependence on imported medication from developed countries, the interruption of supply chains resulting from lockdown measures meant that essential medication could not reach the African countries. The implications of the lockdowns and bans on movements impacted the import of medications and other essential healthcare necessities, further weakening the continent's health system. The effects of the pandemic indicated the need for excellent and functional healthcare systems to promote access to medication if adverse events occur (Adebisi et al., 2020). The implications of the pandemic further strengthened the need for the continent to have sustainable drug production systems.

For countries that had existing medication production channels before the pandemic, most manufacturers relied on imported ingredients, raw materials, and equipment from countries outside the continent (Adebisi et al., 2020). Only a handful of African pharmaceutical companies engage in Research and development (R&D) activities and use local raw materials to produce medication, thus wholly relying on the continent for the entire production process. The pandemic had undoubted implications for medicine security in Africa, with impacted trade, production, and importation of essential medications to address the continent's disease burden. The pandemic underscored the implications of relying solely on individual countries' abilities to meet their own

needs and ensure the safety of their populations, encompassing aspects like disease control. (Adebisi et al., 2020).

Medication Production in Africa

The progressive industrialization of Africa plays a vital role in promoting medication production in the continent. Within the context of the fourth industrial revolution, Africa's manufacturing capability has extended to medicines, medical devices, and other healthcare technologies, which is expected to improve intra-African trading partnerships (AU, 2020). Additionally, the increase in partnerships between the AU and other regional communities has been estimated to play significant roles in promoting public healthcare systems, including implementing the pharmaceutical manufacturing plan for Africa. As a result, the African Medicine Agency (AMA) is a continental agency formed to contribute to the improved regulations of medicines and other medical products and services as part of the AU's African Medicines Regulatory Harmonization (AMRH) initiative.

Although not all AU member states joined the AMA, most are involved in the AMRH initiatives as regional communities. For example, the East African Community AMRH initiative was established in the 2000s to promote harmonization and optimization in regard to regulating medications across the region (Sillo et al., 2020). Regional regulatory harmonizations help incentivize medicine manufacturers to register their medication in the area by decreasing the complexities of the application process. Harmonizing the processes helps alleviate and minimize duplicate applications for assessments and inspections, facilitating faster and cheaper applications for new medicines and medical products (Sillo et al., 2020).

Efforts to form and develop the AMA began in 2014 with AU meetings held in Angola, where the health ministries in the member states focused on prioritizing regulatory capacity and investments, allocation of adequate resources for the agency, and pursuance of convergence and harmonization regarding medical products within the continent (AU, 2020). The circulation and consumption of substandard and falsified medical products are acknowledged as a massive problem for Africa and are associated with weak national and continental regulation systems. As a result, the AMA was proposed to promote investment in production and regulations regarding medical productions for the AU member states. The AMA was established as a treaty with memberships that guarantee improved access to quality, safe, and efficacious medicine. The agency is a specialization of the AU, with specific governing principles, rules, and allocated resources for enhancing the capacity of the nations and regional economic communities in terms of medication regulation. The AMA was, thus, formed to coordinate regulatory systems, strengthen and harmonize AU-recognized regional communities or member state efforts for promoting medication access, and provide regulatory guidance for the member states (AU, 2020).

Additionally, the AMA intends to support the collaborative efforts from the member states or regional communities to improve access to quality, safe, and efficacious medicines, medical products, and health-related technologies. The agency-registered member states are expected to benefit from the strengthened capacity for their medical product regulations and harmonized regulatory systems. The member states include Algeria, Benin, Chad, Ghana, Madagascar, Mali, Morocco, Rwanda, Saharawi Arab Democratic Republic, Senegal, and Tunisia, which were among the first AU member states to sign the treaty.

Africa lacks a solid pharmaceutical research and development capacity, making local drug production still underdeveloped (UN, 2017). Out of the 54 African countries, only 37 possess some pharmaceutical production capacity, with the majority being partnerships with foreign manufacturers. Even in African countries with some manufacturing capacity, the countries opt to import their ingredients, with the exception of South Africa, which uses some of the locally available pharmacological ingredients. Most pharmaceutical production companies in Africa purchase active pharmaceutical ingredients (APIs) from international manufacturers and utilize their formulations to produce the drugs (Adebisi et al., 2020). Other production companies procure the finished medications and repackage them for local consumption.

As a result, Africa imports more than 70% of the pharmaceutical products used in the continent, with India accounting for a large chunk of the imported medication source. Africa receives almost all the medication it needs for treating its biggest disease burdens, including HIV/AIDs, some of which are received as a medical aid. Besides South Africa, countries such as Egypt, Morocco, and Tunisia have had exceptional progress in the last decade in their local pharmaceutical productions. South Africa and Morocco account for the top and second top producers of medication, with up to 70% of medication consumed in Morocco being produced locally. In addition, countries such as Ghana, Kenya, Nigeria, and Tanzania are currently developing pharmaceutical production capacity with a greater potential for reducing the continent's dependency on imported medication (UN, 2017).

In Ethiopia, the country that host the headquarters of the African Union, Africa CDC, and other AU-run public health related organizations, there are 12 medicine manufacturers and 38 medical supply and device manufacturers licensed and operational. The country was among the

first to adopt the AU's pharmaceutical manufacturing plan for Africa by adapting the strategy to build the plants and a food and drug administration agency. The AU's pharmaceutical plan aimed to catalyze local African pharmaceutical production. The strategy involves a collaborative effort between government ministries, regulatory agencies, and other stakeholders to strengthen the country's medicine production and regulatory capacity to ease access to medicine in the continent.

Factors affecting Access to Medicine in Africa

There are various factors affecting access to medicine in sub-Saharan Africa, including policies and financing (Sillo et al., 2020). Additionally, the reluctance of medicine manufacturers to focus on Africa as a consumer of their products by registering their medications for board reviews and certifications in African countries has been associated with considerable delays in improving access to medication in Africa. To market medicines in different countries, manufacturers have to submit applications to national regulatory authorities, which are different for each country in terms of requirements and fees; hence they may have discouraged the process. Additionally, the lack of consideration for African states as potential markets in terms of affordability may have considerable effects on manufacturers' resistance to spending their time and effort on seeking regulatory authority to sell in specific countries (Sillo et al., 2020).

In addition, corruption and lack of transparency and accountability in the registration processes have deterred medication manufacturers from focusing on Africa, with some registration processes lacking clear timelines. A 2012 survey of African pharmaceutical companies indicated that they considered the registration process problematic with issues such as technical issues,

among others. Additionally, medicine manufacturers must also consider profit, which may be deemed too small for the amount of effort required to register in each specific country (Sillo et al., 2020).

The UN (2017) African renewal inquiry report indicated that shortage of resources and lack of skilled personnel are significant inhibitors of medication access in Africa. In low-income countries, public hospitals often experience a lack of essential medications, while private institutions usually stock cheaper, substandard, and low-quality medications. The poor access to medicines in low-income African countries is also coupled with frequent stock-outs and suboptimal utilization of the prescribed medications. In addition, low-income African countries are also characterized by inefficient bureaucratic public sector supply systems, including poor procurement practices, which often make essential medications unavailable and costly if available. The lack of secure and safe storage facilities, mainly due to lack of electricity, adds to the medicine access challenges in Africa (UN, 2017). The problems associated with poor availability and lack of resources to access the medication increase the continent's disease burden.

According to Ekeigwe (2019), there is a lack of trained and competent personnel in Africa's regulatory and pharmaceutical manufacturing fields. Although Africa has its fair of scholars and educated people, those working within the continent are usually poorly trained or poorly paid, thus lacking the motivation to engage in research and development (R&D) activities related to pharmaceutical production. Additionally, brain drain is an actual problem, especially in West Africa, where skilled professionals seek work abroad, hence a skewed distribution of trained, qualified, and motivated healthcare providers (Ekeigwe, 2019). Regarding the professionals working within the continent, the qualified and trained professionals are often concentrated in

urban areas, leaving the rural areas with a higher disease burden unsaturated. Factors such as physical insecurity and access to facilities, among other resources, are attributed to the skewed distribution of healthcare providers, hindering access to medication, leaving the disease burden to broaden in some regions than others (Ekeigwe, 2019).

Access to medication in Africa is closely related to access to healthcare, which may be influenced by different factors such as distance to the hospital, affordability, and delays in seeking healthcare services. Access to healthcare could mean the difference between the patient's access to essential medication and failure, especially where prescriptions are required. In a systematic study to identify the factors impacting women's access to obstetric care in Africa, Geleto et al. (2018) established that women's access to healthcare facilities was determined by factors such as socioeconomic status, distance to the healthcare facility, delays in seeing a professional after getting to the healthcare facility, and attitudes of the patients as well as the healthcare providers. Socio-economic status, especially the financial status of patients, determines their capacity to seek or not to seek healthcare services, particularly if payments are made out-of-pocket for low and middle-income populations, which is the majority of the African population (Geleto et al., 2018).

In some rural and hard-to-access areas, patients may not be willing to seek healthcare services due to distance and accessibility challenges (Geleto et al., 2018). The problem is amplified by the attitudes of the patients and the community, who may consider access to healthcare as a luxury and as only needed when the symptoms get worse. As a result, these patients may have delayed access to medication, leading to unintended consequences in terms of morbidity and mortality. In addition, most healthcare facilities in sub-Saharan Africa are characterized by a shortage of trained staff, which could mean a longer waiting time or increase the risks of

misdiagnoses. In addition, the healthcare providers' training affects their attitudes, which may also influence the patient's willingness to get treatment or access prescribed medication (Geleto et al., 2018). Overall, the challenges of medication access are linked to Africa's entire public health system, and an integrated approach is required to improve all the sectors.

Governance and Health Outcome

Various approaches have been suggested to better the provision of healthcare services and health outcomes. Some of these suggestions include establishing new payment methods and capacity building. According to Savedoff (2011), much attention is now being focused on examining if enhancements in the governance of health services delivery make a difference. Governance has been recognized by Azevedo (2017) as a health system’s building block. Governance refers to the system that controls an institution as well as the system in which this institution operates and by which its people are held into account (Adeloye et al., 2017). The elements of governance include ethics, management of risks, and administration, among others. Governance also involves strategic frameworks that enhance effective oversight, keen consideration of the system's design, and promoting accountability. However, literature that relates to the governance of the health system mirrors governance in a broader view.

According to WHO (2014), many definitions of governance of health systems exist in the current literature that rely on the larger concept of governance, and dimensions and principles of good practice have already been established for the healthcare industry based on these definitions. For instance, USAID refers to health systems governance as a form of governance that is aimed at protecting and promoting people's health, and it entails (1) formulating strategic objectives and direction, (2) Making rules, decisions, policies, and regulations, and deploying and raising

resources to achieve the strategic objectives and goals; and (3) monitoring and ensuring that the strategic objectives and goals are achieved (USAID, 2013). On a different note, Pyone et al. (2017) define health system governance as the integration of normative aspects such as transparency and equity within the political system within which a health system operates.

WHO has included leadership in the concept of governance of health systems and stated that leadership and governance entail making sure that a tactical policy framework is formulated along with efficient oversight, accountability, building of coalition, and paying attention to system design and regulation (WHO, 2014). Usually, leadership and governance entail monitoring and guiding the health system to safeguard the public interest in a broader sense than just mere improvement of health status. The components of health system leadership and governance include strategic vision, transparency, ethics, the rule of law, involvement, responsiveness, effectiveness and efficacy, all-inclusiveness and equity, intelligence and information, and accountability (WHO, 2014).

The key stakeholders who work together to determine the health system and its governance are the state, the healthcare providers, and the citizens who become the service providers. Governance elements evaluate the legal frameworks of health sector management, national management, multi-sectoral management, national institution framework, and aspects of the national program on health sector management. According to Petersen et al. (2017), poor governance and challenges related to human resource management are attributed to inefficient integration of health services in resource-limited countries. Research reveals that leadership and governance in the development of health are significant for the accomplishment of national health goals such as Millennium Development Goals (MDGs) (Kirigia & Kirigia, 2011). According to

the authors, these two aspects might explain why most African Nations did not achieve the MDGs by 2015.

Mwisongo and Nabyonga (2016) investigated the African Global Health Initiatives (GHIs). The investigators concentrated mostly on governance, prioritization, coordination, and arrangement. Global health efforts have altered the structure of distributing funds in Low and Middle-Income Countries (LMICs), particularly in African countries. The research focused particularly on the harmonization and alignment of global and partnership health programs, which were encountered in Africa's less developed nations owing to inefficient coordination. The researchers utilized grey and published literature review study methods. According to the study's findings, the government's inability to track its resources was caused by diverse financing routes. GHIs involve a wide range of tactics and procedures that necessitate the participation of the private sector. The concept involved co-financing from other countries in order to achieve sustainable interventions among the states. However, the analysis determined that the programs had not altered despite the donors' funding having evolved. To maximize the benefits of GHI funding, initiatives such as improved governance and effective alignment with the nation's development priorities are critical. As a result, the study proposes that for GHIs to function effectively, there is a need to enhance leadership and the proper framing of the country's goals. In order to enhance leadership, there is a need to first ascertain if governance has a positive association with health outcomes. Thus, the current study wishes to determine how governance influences the attainment of 21st-century health needs in African Nations.

In a different study, Gilson and Agyepong (2018) investigated approaches to increase health system leadership in Africa for better governance. The study sought to uncover how existing

leadership methods have a detrimental influence on employee motivation and patient care and the elements that contribute to bad leadership within the healthcare industry. Also, evidence of good new participatory leadership and governance practices and methods used to strengthen new bodies of leadership exists. The investigators employed qualitative approaches as well as institutional analysis while executing cross-country study programs with policymakers and managers. The study's findings provide a comprehensive review of healthcare leadership within African countries. Furthermore, there is no clarity on the leadership of public hospitals and the processes necessary to strengthen leadership. According to the study's findings, it is critical to build an enabling atmosphere through good leadership to facilitate appropriate organization. As a result, the report stimulates consideration of the research need to include the highlighted intervention to enhance healthcare leadership. As a result, innovative leadership is required for healthcare system resiliency. Based on this study's findings, it can be inferred that leadership and governance improve health outcomes. The findings of this study will be used to support the results of the current study that examines how governance impacts the achievement of 21st-century health needs in African countries.

Yaqub et al. (2012) undertook a study to explore how the efficacy of public health expenditure is impacted by governance and further determine how this affected health outcomes in Nigeria. The researcher regressed data on governance and public health expenditure variables collected using the corruption perception index on life expectancy, under-5 mortality, and infant mortality variables using ordinary least squares. Also, due to the possibility of reverse causality, the researchers estimated two-stage squares. Results revealed that in cases when the governance indicators are included, public health expenditure negatively affects under-5 mortality and infant

mortality. The corruption levels were reduced, and the value of the corruption index increased; an improvement in the infants' health status was observed while the life expectancy increased. These findings indicated that increasing public expenditure on health has a lower likelihood of improving health status unless corruption issues are dealt with. Yaqub et al. (2012) concluded that the Millennium development goal of minimizing infant mortality rates in Nigeria by two-thirds and, raising life expectancy and lowering under-five mortality in Nigeria would not be attainable if the corruption level is not considerably reduced. This study was limited to quantitative methods. This created a research gap for the current study, which qualitatively examines how governance affects health outcomes in African nations using qualitative methods.

In a related study, Ahmad and Hasan (2016) explored the effect of governance and public health expenditure on health outcomes in Malaysia. Data from 1984 to 2009 were analyzed using an Autoregressive Distributed Lag (ARDL) cointegration framework. The findings that were founded on the bounds testing approach revealed a stable, long-run association between health outcomes and their determinants, such as corruption and government stability, income level, and public health expenditure. The findings revealed that corruption and public health expenditure impact the short- and long-run health outcomes in Malaysia. This study had a limitation in that the researchers did not control for other socioeconomic variables such as access to clean water, female education, and urbanization levels due to the many parameters that were utilized in the regression model, which would result in the loss of a degree of freedom. As such, Ahmad and Hasan (2016) urged future scholars to consider testing other factors that affect health outcomes while examining how health expenditure and governance impact health outcomes. Thus, the current study aims to fill this research gap by exploring the impact of state governance on the attainment of 21st-century

health needs within African countries along with other factors that affect health outcomes such as Africa CDC, access to quality, safe, and efficacious quality medicine, and supply of essential medicines in Africa.

In a different study, Olafsdottir et al. (2011) conducted a study to examine the association between health system governance, health outcomes, and equity in Sub-Saharan Africa (SSA). The goal of the research was to extend the range of indicators utilized to evaluate health systems' performance. Olafsdottir et al. (2011) utilized cross-sectional data from a total of 46 nations in the African region. An ecological analysis was performed to explore the association between the performance of health systems and governance. A standard progressive modeling procedure and multiple linear regression methods were utilized to analyze the data. Health outcome was measured using the under-5 mortality rate, while health equity was measured using the ratio of under-5 mortality rates in the poorest and wealthiest quintiles. On the other hand, governance was measured by utilizing two contextually pertinent indices that were developed by the Mo Ibrahim Foundation. Research findings indicated that governance had a significant positive relationship with under-five mortality rates and that the relationship between governance and the under-5 mortality quintile ratio was moderately significant. After the researchers controlled for any probable confounding by finance, healthcare, water and sanitation, and education, it was established that governance still had a significant association with under-5 mortality rates. The researchers concluded that governance quality might not be a significant structural determinant of the performance of health systems. Olafsdottir et al. (2011) further urged that governance was an indicator that needed to be further explored in terms of its impact on health outcomes beyond under-5 mortality rates, thus creating a research gap for the current research project, which

examines how the state of governance in Africa affects the accomplishment of 21st-century health needs.

Furthermore, Ciccone et al. (2014) conducted a literature review-based study to explore the association between health outcomes and governance mechanisms in LMICs. The researchers reviewed 30 studies that explored the association between governance and health outcomes. Ciccone et al. (2014) established four main governance mechanisms through which governance influences health outcomes. These included the decentralization of the health system that allows responsiveness to local values and needs, improved community engagement, health policymaking that empowers and aligns different stakeholders and reinforced social capital. Ciccone et al. (2014) reveal that most of the studies, although not all of them, indicated a positive relationship between governance practices and health outcomes. The authors further revealed that the nature of the association between health outcomes and governance mechanisms differs across studies. Research findings revealed that in nine studies, governance was found to have a direct significant positive relationship with health outcomes, while five studies showed an indirect significant positive association between governance mechanisms and health outcomes. Six of the reviewed studies had mixed findings, while four studies reported that there is no association between health outcomes and governance. Additionally, two studies that were reviewed had inconclusive results concerning the association between health outcomes and governance. Due to the inconsistent and inconclusive results from the various studies that were reviewed, Ciccone et al. (2014) urged that a further investigation is required to gain a comprehensive understanding of the association between health outcomes and governance. The current study aims to fill this research gap by exploring how state governance in Africa impacts the achievement of 21st-century health needs within African nations.

Adeloye et al. (2017) conducted research on Nigeria's health workforce and governance problem. The article's specific goal was to evaluate the current problem in Nigeria's health workforce by analyzing the causes and presenting ideas to avert or manage the nation's expected health disaster. The authors conducted a comprehensive literature search on PubMed to collect articles concentrating on health governance and the health workforce in Nigeria and critically examined publications on the health workforce problems between 2010 and 2016, as well as Nigeria's health systems. According to the findings, the healthcare problem is caused by delayed wages, poor welfare, insufficient healthcare facilities, and rising difficulties among the workforces. The findings indicated that the governance results in weak response and administration mechanisms, leading to the country's growing issue. The researchers determined that the health system in Nigeria is underdeveloped, and there exists no harmonized response to the country's health issues.

Fryatt et al. (2017) also undertook a study to determine whether there is a need to further explore governance concepts within the healthcare industry. Specifically, the authors summarized the most recent indication of the effect of governance on health, examined how governance interventions can be assessed, and explored what constitutes a good investment in healthcare industry governance in a setting where resources are limited. The authors established a positive link between governance and health outcomes. The researchers stated that even though there is a wide scope of literature available concerning the efficacy of strategies for strengthening governance in LMICs, a more in-depth synthesis of this information needs to be customized to the local context. This study seeks to fill this research gap by examining the impact of the state

government on the attainment of 21st-century health needs in different African countries and further explore various ways of strengthening health systems governance in these countries.

Harman (2012) also wrote a very informative book on global health governance. In his book, which sought to provide a comprehensive and informative introduction to how global health is governed, Harman (2012) examined the different ways in which individuals understand global health governance, explained the main aspects of traditional institutions of global health governance while providing more details on key treaties and frameworks and their respective failings and successes. The author further defines the main actors in global health governance, their purpose, and their influence. Harman (2012) further provides a detailed analysis of the effectiveness of global health interventions, with a specific focus on Malaria, HIV/AIDs, and tuberculosis. By pinpointing the wide variety of issues, approaches, and actors involved in health systems governance, Harman (2012) showcases the complex nature of global health governance, which has led to the need to further explore health systems governance in terms of what governs global health and the health outcome of health systems governance. This study seeks to fill this research gap by examining the effect of state governance in Africa on the achievement of 21st-century health needs within African nations.

In a different study, Hu and Mendoza (2013) empirically studied the link between public spending, governance, and health outcomes among LMICs. Health outcomes were measured in terms of child mortality and infant mortality rates. The researchers utilized data for the years 2006, 2005, 2003, and 1995. Regression models were estimated using fixed-effects approaches. The findings indicated that health spending significantly reduces under-5 mortality and infant mortality rates with an elasticity ranging between 0.13 and 0.33 and 0.15 and 0.38 for infant mortality and

under-5 mortality, respectively. The results also showed that government health spending significantly minimizes child and infant mortality rates, and the coefficient size depended on the degree of good governance attained by the nation. This implied that good governance improves the efficiency of health spending. Consequently, this improves health outcomes. Thus, it can be inferred that governance indirectly impacts health outcomes. Since this study was limited to quantitative data, this creates a research gap for the current study, which will employ qualitative methods to determine how state governance in Africa impacts the achievement of 21st-century health needs in Africa.

Additionally, Atkinson and Haran (2004) examined whether decentralization improves the performance of the health system in Ceará, North-East Brazil. Ceará state was chosen for this study since it is strongly committed to a decentralized form of governance. The researchers conducted a survey across a total of 45 local health systems performance as well as data on the formal organization, such as informal management, decentralization, and local political culture. The indicators for local political culture and informal management were based on a previous ethnographic study. In their study, Atkinson and Haran (2004) found that governance is important as it contributed to improved health performance. Besides, in the multiple regression analysis, decentralization was a significant predictor of only one performance indicator. Based on the study's results, indicators for political culture and informal management seemed to be more important influences. Atkinson and Haran (2004) concluded that good management results in decentralized local health systems. The authors further explained that any link between health system performance and decentralization appeared to be a result of informal management as well as the wider political culture that guides the operations of a local health system. Since this study was

based solely on quantitative data, there is a need to ascertain these results using qualitative methods. This study aims to fill this research gap by using qualitative methods to explain how state governance in African countries impacts the achievement of 21st-century health needs among African nations.

In a related study, Anokbonggo et al. (2004) also explored the perceptions and attitudes of stakeholders on health services' decentralization in Apac and Lira districts, which started in 1994, and provided suggestions to help improve the implementation of similar policies in the future. The researchers employed a qualitative research method, and data were gathered using focus group discussions with 90 stakeholders recruited from the two states. Based on the study findings, there was a general consensus that decentralization empowers political decision-making and local administration. Besides, the study findings revealed that decentralization was associated with several problems, such as inadequate financial resources, resource mismanagement, increased nepotism, and harassment of civil servants. Consequently, these adversely impact health outcomes. The authors concluded that there are various critical factors, including sufficient availability and efficient utilization of resources, acknowledgment of the stakeholders' roles by district politicians, proper sensitization and training of the policymakers, rationally developed infrastructure before the policy change, and the goodwill and active engagement of the local community, which successful implementation of the decentralization policy depends. According to Anokbonggo et al. (2004), without these factors, implementing decentralized health services may not have immediate administrative and economic sense. Anokbonggo et al. (2004) study provides the basis for the current research, which examines how the state of governance in Africa contributes to the achievement of 21st-century health needs within African countries.

In a different study, Blas and Limbambala (2001) explored user payment, decentralization, and the utilization of health services in Zambia. Data was collected using interviews, whereby provisional and district health heads and health workers were interviewed. Secondary provisional data were retrieved from the provisional health information system, and financial data were obtained from national and provisional budgetary reports. Blas and Limbambala (2001) reported that health workers have negative opinions on the effects of decentralization. According to the study findings, the most common complaint reported was a lack of qualification of the District Assistant Secretaries (DAS), a lack of equity in personnel between districts, diversion of funds to other programs, and lack of sufficient professional supervision. Other challenges that were reported to arise following further decentralization included a lack of professional oversight and support of health professionals, insufficient oversight by the locally elected officials, lack of definition of the district and provisional administration, and insufficient budget.

Bustamante (2010) also undertook a tradeoff study between decentralized and centralized healthcare providers in rural Mexico. Specifically, the researchers compared the provider performance since decentralized and centralized providers coexist in rural areas in Mexico. The study utilized secondary data retrieved from the 2003 household survey of Oportunidades, which was a research project on rural families from 7 states in Mexico. During the analysis, the researcher compared out-of-pocket healthcare expenditure and the use of preventive care among families residing in rural areas that had access to either decentralized or centralized healthcare providers. The study findings showed that centralized providers performed better compared to their decentralized counterparts. The households that were served by centralized organizations reported less regressive out-of-pocket health care expenditure as well as increased utilization of preventive

services. Besides, findings revealed that decentralized practitioners who were dedicated to state governments during the early 1980s had a slightly improved performance compared to those who were decentralized during the mid-1990s. Thus, based on these findings, it can be inferred that governance impacts health outcomes. The findings of this study will be used to justify the finding of the current study that aims to explore how state governance of African nations impacts the attainment of 21st-century health needs.

Similarly, Nepal (2007) examined the link between good governance, equity, and health outcomes with a specific focus on the HIV/AIDS pandemic and its feminization. The researchers performed a cross-country analysis. Two outcome variables, including the size of the HIV/AIDS epidemic at the national level and the share of women in the epidemic, were chosen for analysis. The independent variables included level of wealth, good governance, economic inequality, and gender equity. Data were created by compiling data from three different sources. The analysis was performed on a total of 100 nations. Multivariate and bivariate analyses were performed for this study. The results of bivariate analysis established a significant inverse association between the size of the HIV/AIDS epidemic and wealth. Also, gender equity had an inverse relationship with HIV/AIDS prevalence. In relation to governance, the results of the bivariate analysis indicated that better governance was associated with a smaller size of HIV/AIDS epidemics. This implies that better governance improves health outcomes. These findings are supported by Lewis and Pettersson (2009), who urge that good governance in health systems ensures effective delivery of health services. This study's results will be used to support the findings of the current study, which examines how governance impacts health outcomes in African nations.

Lastly, Lazarova (2006) conducted a study to define the relationship between governance and health outcomes measured using infant mortality rate. The data were obtained from a total of 112 nations. The sample for this study comprised both developing and developed countries. Lazarova (2006) performed regression analysis to establish the nature of the association between the study variables. Based on the study findings, governance was projected to have a significant negative association with the infant mortality rate. The researcher further explored whether governance was a significant predictor of infant mortality compared to relative income. The statistical findings were inconclusive. This has created a research gap for the current study as there is a need to further investigate the relationship between income and governance, which is a significant predictor of health outcomes measured in terms of infant mortality rates. This study sought to fill this research gap by examining how health financing and governance impact the attainment of health needs in African nations.

2.3. African Union

The AU has a significant role in managing health care across the continent, among similar efforts by other continental unions. Established in 2001, the AU leads initiatives like the Abuja Declaration, urging African member states to allocate at least 15% of their budgets to health care. Additionally, the Africa Centres for Disease Control and Prevention (Africa CDC) enhances disease surveillance and response. Comparatively, other continental unions like the European Union (EU) and the Association of Southeast Asian Nations (ASEAN) also prioritize health care management. The EU implements comprehensive health policies, while ASEAN coordinates efforts among member states through frameworks like the ASEAN Health Sector Cooperation Framework. The EU has established comprehensive health policies and initiatives focusing on

ensuring access to quality care, and promoting research and innovation. Similarly, the ASEAN has focused on coordinating health efforts among its member states through the implementation of health initiatives like the ASEAN Health Sector Cooperation Framework. Despite differences in structure and resources, all unions have a common goal of improving health outcomes and addressing global health challenges. Collaborations between unions, including AU-EU partnerships, support knowledge sharing, capacity building, and pandemic preparedness. Through knowledge sharing, technical support, and joint initiatives, unions are able to leverage their own strengths in response to common health priorities. For instance, the AU and the EU have established partnerships in areas such as research, capacity building, and pandemic preparedness for health improvement.

Also, there exist challenges in this unions, including limited resources, political instability, and varying levels of commitment among member states. However, opportunities for collaboration thrive. Joint initiatives between the AU and regional economic communities (RECs) within Africa can enhance regional health policies and implementation.

The African Union's Governance Role in Managing Health Concerns in Africa

Governance within the AU involves structures and processes that facilitate decision-making and implementation. In managing health concerns, effective governance is essential for ensuring accountability, transparency, and equitable distribution of resources. The AU's governance frameworks, including policies, protocols, and institutions, play a crucial role in influencing the formulation and implementation of health strategies. Governance impacts the effectiveness of AU interventions in health management. Strong governance structures enhance the capacity of AU to mobilize resources, coordinate efforts, and monitor and assess health

progress in response to any health challenges. On the other hand, weak governance hinders the AU's ability to adequately respond to or address health crises, resulting in inefficiencies and disparities in health outcomes. Examples of AU Governance Initiatives in support of healthcare governance is the implementation of various health initiatives to improve Africa's health management. These initiatives include the establishment of the Africa CDC, which operates under the AU's governance framework to strengthen disease surveillance and response capabilities. Additionally, the AU's adoption of the Abuja Declaration highlights its assurance to prioritizing health financing and resource allocation among member states.

As a critical aspect of AU's efforts to manage health concerns in Africa, governance is crucial in promoting accountability, transparency, and collaboration. Effective governance is essential in enhancing the AU's ability to address health challenges and improve outcomes for populations across the continent. Focusing on governance reforms and institutional strengthening is important towards achieving sustainable progress in health management within the AU framework.

Africa Centres for Disease Control and Prevention (Africa CDC) and Global Health System

The Africa CDC was established on January 26, 2016, and officially launched by the governments and head states of the African Union (AU) alongside the leadership of the African Commission on January 31, 2017, in Addis Ababa (Varma et al., 2020). Africa CDC is run by a Governing Body that offers overall strategic guidance to the Secretariat according to the AU policies and procedures. An Africa CDC board facilitates the centers' strategic agenda of quick and effective detection, surveillance, and response integrated into a single AU commission strategy

of development. The Advisory and Technical Council supports the Africa CDC governing board. This council advises Africa CDC on matters related to disease control and prevention as well as other emerging issues. It also reports on Africa CDC's advocacy, resource mobilization, and strategic plan activities. Usually, the daily activities of Africa CDC are coordinated by the Secretariat, who is based at the AU Commission headquarters in Addis Ababa, Ethiopia. The Secretariat works under the support of a multidisciplinary team of experts and the leadership of the commission director (Africa CDC, n.d.).

The main goal of the Africa CDC involves strengthening the capability and capacity of public institutions of health in Africa and strengthening partnerships to spot and retort quickly and efficiently to threats and outbreaks of diseases based on data-driven programs and interventions (Varma et al., 2020). African CDC was formed as part of the global public health strategies for combating emerging and re-emerging threats through rapid and coordinated actions. The institution was developed as part of the AU member states' strategy for an African-owned institution for preventing, detecting, and responding to public health threats. Besides, in Africa, CDC supports AU member states to provide coordinated and integrated solutions to the shortfalls within their human resource capacity, public health infrastructure, laboratory diagnostics, disease surveillance, and response and preparedness to health emergencies and disasters (Africa CDC, n.d.). It also serves as a platform for AU member states to share and exchange lessons and knowledge from public health interventions. Usually, CDC is guided by principles of ownership, leadership, delegated authority, credibility, timely dissemination of information, delegated authority, and transparency in conducting its daily activities (Africa CDC, n.d.).

The institution has centers located in each of the five African regions, collaborating directly with member states to implement the CDC's strategy (Africa CDC, n.d.). The five centers are located in Zambia for southern Africa, Kenya for East Africa, Gabon for Central Africa, Nigeria for West Africa, and Egypt for North Africa. The African CDC headquarters and Emergency Operations Centre is located at the African Union Commission in Addis Ababa, Ethiopia, from which the strategies for the continent in regard to the six working areas are implemented. Africa CDC works collaboratively with AU member states, partners, and WHO in six strategic areas: (1) Disease Control and Prevention (DCP); (2) Emergency preparedness and response (EPR); (3) Laboratory systems and network (LSN); (4) National public health and institutes and research (NPHIR); (5) Public health information systems (PHIS); and (6) Surveillance and Disease Intelligence (SDI) (Africa CDC, n.d.).

The main objective for the division of disease control and prevention is to strengthen Africa's systems for the management and prevention of communicable and non-communicable diseases to achieve positive health outcomes (Africa CDC, n.d.). The division creates and strengthens the member states' capacities to prevent and control neglected tropical diseases, endemic illnesses, and non-communicable diseases, including mental health. The division achieves its mandate through identifying, leveraging, and integrating existing human and public health resources to achieve universal health coverage across the continent. The division's units can be grouped into neglected tropical diseases, endemic diseases, and non-communicable diseases (Africa CDC, n.d.).

The role of Emergency Response Preparedness (ERP) is to ensure that the AU member states have adequate public health emergency preparedness measures. The EPR division supports

the AU member states in developing and implementing detailed and regularly tested preparedness and response plans. The ERP division oversees the development and testing of multi-sectorial and multi-hazard response plans for national, regional, and continental public health emergencies. Additionally, the division is in charge of establishing and managing national and regional public health emergency stockpiles (Africa CDC, n.d.).

The goal of Laboratory System Networks (LSN) is to strengthen public and clinical health laboratory networks and systems through continuous improvements to ensure quality and safety (Africa CDC, n.d.). The division was developed to foster patient-centered integrated diagnostic testing incorporating the management of syndromes and surveillance of communities. The objectives of the LSN include supporting member states to establish and run national laboratory systems with disease surveillance systems. Additionally, the division oversees the development plans and supports policy development for federal regulations involving securing and handling pathogens. The African CDC's LSN also supports the implementation of advanced laboratory technologies and the implementation of patient-centered diagnostic systems. The LSN also oversees the development and maintenance of repositories for diagnostics and vaccine development for emerging pathogens, in addition to workforce training (Africa CDC, n.d.).

The National Public Health Improvement Initiative (NPHII) serves to strengthen public health science and improve decision-making practices for public health to attain positive health outcomes (Africa CDC, n.d.). The NPHIR establishes the current Africa CDC public health agenda, including the goals and objectives for addressing the priority health issues. The NPHIR's role of strengthening public health science is built through partnerships with academic institutions in the AU member states to build public health research capacity within public institutions in these

countries. The institution also supports existing collaborations with public health research networks. The institute is also responsible for characterizing and re-characterizing the disease burden based on continental, regional, or national health concerns. To achieve this, the institute supports the implementation of surveillance methodologies through traditional surveys and innovative use of technologies to characterize and categorize the public health issues and research agenda (Africa CDC, n.d.).

Public Health Information Systems (PHIS) strengthens information systems that support Africa's public health strategies. The objectives of the PHIS include the development and implementation of a continental data-sharing platform for member states, secure electronic transmission of the data, and monitoring efforts for ensuring safe and efficient data sharing. Additionally, the PHIS is tasked with organizing and supporting information technology and informatics standards for enabling interconnectivity across the continent. The institute is also in charge of providing training and information management software to facilitate public health improvements, such as diagnostics, emergency preparedness, or disease surveillance, among others (Africa CDC, n.d.).

The surveillance and disease intelligence (SDI) unit aims to strengthen Africa's disease surveillance systems to improve public health decision-making and action plans (Africa CDC, n.d.). The unit's objectives include establishing event-based surveillance for early warning and disease predictions to prompt early response. The unit works with the national public health institutes in the member states to coordinate surveillance systems in different sectors to ensure that the surveillance data informs national health-related policies. The unit supports existing surveillance systems in member states through investments for technological advancement,

workforce training, and partner collaborations. The SDI supports surveillance of the priority diseases in the continent, such as malaria, HIV, tuberculosis, etc. In addition, the SDI supports regional collaboration to strengthen monitoring and surveillance through shared data and laboratory networks engagement (Africa CDC, n.d.).

Functions of Africa CDC

According to Kengasong et al. (2017), to achieve the capability required for implementing the strategic priority goals, the Africa CDC will create advanced programs in competency-based partnership, employee development, communication among member states, and financing of public health activities in the next five years. This approach will assist African nations in achieving existing international health targets and SDGs, UHC, and International Health Regulations (IHR) (Kengasong et al., 2017). The functions of Africa CDC can be grouped into its two institutes, the institute of pathogen genomics and the institute of workforce development. The role of the institute of pathogen genomics is to enhance disease surveillance and public health partnerships. In contrast, the institute of workforce development focuses on strengthening the public health workforce in the continent. Africa CDC's roles of creating alliances, integrating systems, and promoting infrastructure capacity are conducted through pathogen genomics. Conversely, all the roles that require workforce partnerships, training, and improving human resource capacity are conducted through workforce development (Africa CDC, n.d.).

In Africa, almost 140 disease outbreaks are reported annually across the continent (Watts, 2019). Through the Institute of Pathogen Genomics, Africa CDC tracks the outbreak using both technologies for genomic sequencing to detect and monitor diseases (Africa CDC, n.d.). The institute collaborates with national and regional health systems to conduct surveillance, hence

gaining insights into disease transmission, vaccination, or treatment response. Since its launch, Africa CDC has, through the Institute of Pathogen Genomics, tackled pathogens responsible for diseases such as malaria, polio, tuberculosis, HIV/AIDS, Ebola, cholera, and COVID-19. Through the workforce development institute, Africa CDC collaborates with national health ministries, public health offices, and other public institutions in AU member states to select and train the appropriate employees to handle the surveilled public health problems (Africa CDC, n.d.; Watts, 2019).

Regional Collaborating Centers (RCC)

The specific roles of the Africa CDC vary based on the region, given Africa's vast geography. The regional collaborating centers (RCC) are five, and each serves a list of neighboring countries from one center (Africa CDC, n.d.). The Southern Africa RCC manages partnerships with ten countries, with offices located in Lusaka and Zambia. The Southern Africa RCC caters to Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe. The RCC is the second largest in Africa in terms of country coverage and works in partnerships with the WHO and national public health institutions to surveil, monitor, track, and solve public health emergencies (Africa CDC, n.d.).

The Western Africa RCC is the largest in Africa, offering partnerships with 14 AU member states located in the region (Africa CDC, n.d.). This regional center is the most active in disease outbreak surveillance, monitoring, and solving efforts, given the region's history with disease outbreaks such as Ebola and Lassa fever (Amukele, 2017). The Western Africa RCC's other priority public health issues include cancer, diabetes, yellow fever, and road accident morbidities.

The RCC is headquartered in Abuja, Nigeria, and works in close partnerships with the 14 member states (Africa CDC, n.d.; Watts, 2019).

The Northern Africa RCC is currently not operational and is proposed to be hosted in Cairo, Egypt (Africa CDC, n.d.). The RCC will coordinate public health across the seven AU member states located in the region. The countries that do not currently collaborate with the existing Africa CDC centers have fairly established public health systems compared to the other areas in the continent. The countries are Egypt, Algeria, Mauritania, Morocco, Libya, Tunisia, and the Sahrawi Arab Democratic Republic. The Central Africa RCC is headquartered in Libreville, Gabon, and partners with nine (9) countries. The roles of the RCC include improving disease surveillance, diagnostics, and response to outbreaks. Additionally, the RCC encourages improved public health access within the member states (Africa CDC, n.d.).

The Eastern Africa CDC partners with 14 AU member states located within the greater Eastern Africa region. Since its establishment, the RCC has strengthened disease surveillance and outbreak response within the area (Watt, 2019). The RCC is headquartered in Nairobi, Kenya. It prioritizes infectious diseases in the region, such as the Rift Valley fever, prevalent in several of the 14 member states (Africa CDC, n.d.). In addition to strengthening surveillance, the EA-RCC has been involved in improving laboratory systems and public health information sharing within the region (Africa CDC, n.d.). Other notable roles of the EA-RCC include supporting public health advocacy for implementing and coordinating public health interventions (Varma et al., 2020).

Roles of Africa CDC in Public Health in Africa

Africa CDC surveillance efforts are mainly focused on the priority diseases for each region and disease outbreaks (Varma et al., 2020). Since it was formed, Africa CDC has dealt with

significant disease outbreaks, COVID-19 and Ebola Virus Disease (EBV). Africa CDC has been monitoring and providing support for combating both COVID-19 and EBV. In addition to COVID-19 and EBV, Africa CDC also monitors 22 other diseases prevalent in Africa, with the specific RCCs paying more attention to the diseases more prevalent in the regions (Africa CDC, 2020). While some of the monitored diseases, such as Anthrax, malaria, tuberculosis, etc., have established effective treatment protocols, others like Chikukunya do not have treatment regimens or vaccines (Africa CDC, n.d.). The Africa CDC's efforts in these diseases involve surveillance to enhance prevention before a widespread infection occurs.

The most active campaigns by the Africa CDC in the last two years have been those related to COVID-19 and antimicrobial resistance awareness and prevention (Africa CDC, 2021). Africa CDC has been very active in presenting up-to-date recommendations, statements, and statistics regarding COVID-19. The institution has been providing timely recommendations such as vaccination uptake, border re-opening strategies, among other prevention strategies (Osseni, 2020). Regarding antimicrobial resistance, the institution issues statements alerting its partners of the growing antimicrobial resistance in Africa and recommendations for prevention, including those that require stakeholders to identify as champions and pioneer prevention efforts (Africa CDC, n.d.).

Implications on Public health

Africa CDC was established as a roadmap for enhancing the continent's development regarding public health (Nkengasong et al., 2017, Watt, 2019). Other objectives for establishing the Africa CDC included facilitating movement across Africa, recognizing the potential for re-emergence of pathogens, and existing threats of endemic and emerging infectious diseases. In

addition, the Africa CDC wanted Africa to respond to its public health problems by relying on developed countries without such problems to help solve such crises. Some of these problems included high maternal mortality rates and high HIV infections, among others. Establishing Africa CDC was the continent's closest sustainable solution to its problems (Nkengasong et al., 2017; Watt, 2019).

The African public health system is characterized by a lack of necessary and sufficient assets such as surveillance and diagnostic networks and a competent and experienced public health and health research workforce, among others (Wadoum & Clarke, 2020). Therefore, the Africa CDC was mandated to provide a strategic plan for promoting public health within the member states by improving the areas lacking (Ossen, 2020). The categorization and division of the Africa CDC strategy areas and institutes aim to achieve these goals by supporting robust systems for surveillance, laboratory, and building competence and experience through training programs (Nkengasong et al., 2017). The institutes subdivide the labor so that each gains and distributes resources to meet their goals, which, when combined, serve the overall purpose of improving public health systems. The institution uniquely works by partnering with the AU member states to improve their systems or strengthen existing ones (Varma et al., 2020).

A significant goal for Africa CDC is public health emergency preparedness, which is achieved through policy and data-informed interventions (Amukele, 2017; Nkengasong et al., 2017). The institutions partner with the relevant public health systems, such as hospitals and research institutions, to prepare for possible outbreaks or re-emergence of diseases and develop strategies for minimizing spread and mortality. Partnering with member states ensures that the countries respond to calamities in ways that match their capabilities. The countries are, however,

well informed regarding the best approaches and time to take action through the collaborations with Africa CDC, which provides diagnostic capabilities and strengthens the existing health systems to ensure they are well equipped to handle the crises (Amukele, 2017; Nkengasong et al., 2017).

Additionally, Africa CDC collaborates with WHO regional offices to develop the required frameworks for the member states with missing institutions, such as those for public health research (Varma et al., 2020). Generally, Africa CDC partnerships involve improving national and regional disease surveillance, diagnostics, emergency response, and information sharing. Like existing global health organizations with offices in Africa, such as WHO and Africa Society for Laboratory Medicine, Africa CDC aims to strengthen the core public health systems in the member states (Nkengasong et al., 2017). The institution also works closely with non-governmental organizations in its core purpose of improving surveillance, diagnostics, emergency response, and information sharing. With limited capacity, the success or failure of Africa CDC will result from its collaboration efforts and partnerships with the member states. Since its formation, Africa CDC's handling of the EBV, unique to Africa, has been highly dependent on regional and national collaborations to strengthen responses (Watts, 2019). Africa CDC fills a significant gap in outbreak response, particularly speed of response and use of public health surveillance data. The Africa CDCs efforts in data sharing and surveillance utilization have significantly improved response capabilities, not just concerning EBV but in other outbreaks such as cholera and hemorrhaging fevers (Varma et al., 2020).

One of Africa's significant challenges in terms of disease outbreak response was known during the 2014-2016 EBV outbreak in West Africa (Bell et al., 2016). Prior to the COVID-19

outbreak, the CDC orchestrated its most extensive response ever to an unparalleled epidemic, effectively managing infections in West Africa while also laying the groundwork for handling potential outbreaks within the United States. West Africa's response to the outbreak was undeniably slow, mainly due to poor surveillance infrastructure (Bell et al., 2016). By the time surveillance picked up on the outbreak, a chain of transmissions leading to mortality had been going on, unrecognized, for months. In addition to the lack of surveillance infrastructure, the public health systems in the region were also lacking in the capacity to detect and respond to a rapidly evolving outbreak such as EBV (Bell et al., 2016). Within months, the outbreak had spread to urban areas, overwhelming the treatment and isolation capacity of the three nations. Additional challenges included poor infection control and limited testing capacity, which led to transmissions within the healthcare facilities, including healthcare workers, hence the collapse of the healthcare system (Bell et al., 2016).

Within a few months of detection, the EBV epidemic was out of control, with a collapsed health system and incomplete information regarding the extent of the outbreak (Amukele, 2017). These challenges, coupled with a high mortality rate of EBV, greatly exacerbated the condition in the three countries, Guinea, Liberia, Sierra Leone, and the larger West Africa, and cross-Atlantic transmission (Bell et al., 2016). The challenges of the EBV outbreak served as a lesson to Africa regarding the consequences of poor public health infrastructure, including surveillance, diagnostics, and emergency preparedness and response, which are the primary core purposes of Africa CDC (Nkengasong et al., 2017). The CDC and other organizations' external response to the epidemic involved improving surveillance, diagnostic capabilities, and data collection and sharing (Bell et al., 2016). Partnerships and collaborations with other agencies, such as those manning the

borders, were the most effective strategies to control transmission and prevent infections in the areas not yet affected.

Africa CDC operates on some of the lessons learned from the 2014-2016 EBV epidemic in West Africa, which greatly informed the AU's decision to form the institution (Osseni, 2020). Although that was not the first EBV outbreak in Africa, this was the largest in history and presented new challenges that had previously not emerged (Wadoum & Clarke, 2020). The implications of slow response were known during the epidemic and were complex. As a result, the implications of infrastructure, socio-demographic factors, and population relationships with public health on outbreak response are known, and control efforts involve managing these factors (Wadoum & Clarke, 2020). Building partnerships with the existing public health systems is, thus, necessary because the public has to trust the nation's available systems instead of viewing the new systems as more trustworthy (Watts, 2019). As a result, Africa CDC's mandate involves working with the existing systems to develop and strengthen infrastructure and systems suited to disease outbreak management.

The COVID-19 pandemic is undoubtedly the most challenging global epidemic in a century (Osseni, 2020). The pandemic was a common challenge for Africa, with the Africa CDC being the first reported outbreak since its formation (Wadoum & Clarke, 2020). Africa has the least developed public health infrastructures globally, including disease surveillance, diagnostics, and information sharing. The continents' experiences with the EBV epidemic five years before the COVID-19 pandemic still lingered, and the continent's emergency preparedness response was unknown (Osseni, 2020). Following the previous EBV outbreak, AU member states formed alliances to support the Ebola outbreak and the Africa CDC, whose mandate was to strengthen

public health emergency preparedness in the nations. Africa's response to the COVID-19 pandemic indicated the application of the lessons learned during the previous EBV outbreak. Africa CDC straightway activated operations in its emergency operations center and incident management systems as early as January 2020, which was a massive deviation from the months-late response experienced five years earlier. The agency facilitated the setup of health authorities, protocols, and emergency preparedness procedures for the AU member states (Osseni, 2020).

The Africa CDC's initial actions involved selecting the member states with high travel volumes from China to curb transmission into the countries (Osseni, 2020). Subsequently, the agency began training laboratory and diagnostic personnel, supplying testing kits, and implementing point-of-entry surveillance in its member states. Additional actions by the Africa CDC included providing technical support for screening and treatment of suspected cases, diagnostic confirmation of cases, and safe isolation of suspected and confirmed cases. The agency continued providing protection and testing kits as it received donor funding and continued implementing the continental action plan for emergency preparedness in the AU member states as cases continued increasing (Osseni, 2020). By mid-2020, Africa CDC also had to deal with measles and EBV outbreaks in central Africa, cases that were also met with surveillance and diagnostic capacity (Nkengasong & Tessema, 2020).

Africa’s response to COVID-19 differed significantly from the previous EBV epidemic approach, where the continent relied on external help with collapsed healthcare systems in the affected countries (Bell et al., 2016; Varma et al., 2020). Despite the COVID-19 pandemic being more widespread, Africa's implications were significantly better than some developed countries. Therefore, the role of the Africa CDC in handling the pandemic cannot be ignored. The agency

implemented effective emergency preparedness action plans, which involved increasing surveillance, improving diagnostics, and preventing infections, actions in line with the mandate of the Africa CDC (Osseni, 2020). The activities of the agency had significant implications for the continent especially considering the timelines of implementations.

The Future of Africa CDC

The COVID-19 pandemic serves as a wake-up call for Africa and the rest of the world on the threat of infectious diseases on health, security, and economy (Nkengasong & Tessema, 2020). Infectious disease remains a significant threat to Africa and its development agenda. In 2020, Africa CDC reported 15 different cases of emerging and re-emerging outbreaks, some of which have no development treatment plans or vaccines. Measles and cholera are some of the reported re-emerging infections of 2020, affecting more than 10000 people in one of several outbreaks (Africa CDC, 2020). In addition, some of the diseases were emerging and have had effective vaccines for years but were reported in increasing numbers in 2020. Some of the emerging disease outbreaks were; polio registered in 14 countries, rift valley fever in three, and Crimean-Congo hemorrhagic fever in four countries (Africa CDC, 2020). Although speculations on the reasons for the emergence of novel infectious diseases, the fact remains they are a severe threat, with the continent having an immense endemic burden in the world (Nkengasong & Tessema, 2020). The continent has made significant steps in disease surveillance compared to some years back, partly thanks to Africa CDC. However, there is still a need for more to be done to improve surveillance and achieve a predictive capacity to be ahead of infections and implement control measures (Nkengasong & Tessema, 2020).

The role of the Africa CDC in public health emergency preparedness has been tested over the years, with the ultimate being the COVID-19 pandemic. However, the impacts of the pandemic for Africa and a global perspective are long-term and not entirely known. The agency's previous emergency preparedness plans have been designed with a short-infection duration in mind (Africa CDC, 2021). There is a need for the agency and other partners to focus on research and development investments based on long-term emergency preparedness, unique geographies, and current African priorities. While the need for Africa-developed initiatives for solving African problems persist, the agencies responsible have to critically analyze their contribution to the current realities of the African continent.

While Africa CDC should continue with the previous agenda for collaboration and partnerships with AU member states on disease surveillance, laboratory testing, research capabilities, and data gathering and information sharing, among others, the agency's plans should always meet the current African challenges. Considerations should be considered regarding political and leadership situations if the partnerships with Africa CDC are expected to work. As observed in the agency's response to COVID-19, the answer to the agency’s recommendations for surveillance, testing, and transmission control may not always be similar for different regimes; there is a need for the AU and Africa CDC board to strategize on how to address the uniquely African challenges.

2.4. Conceptual Framework

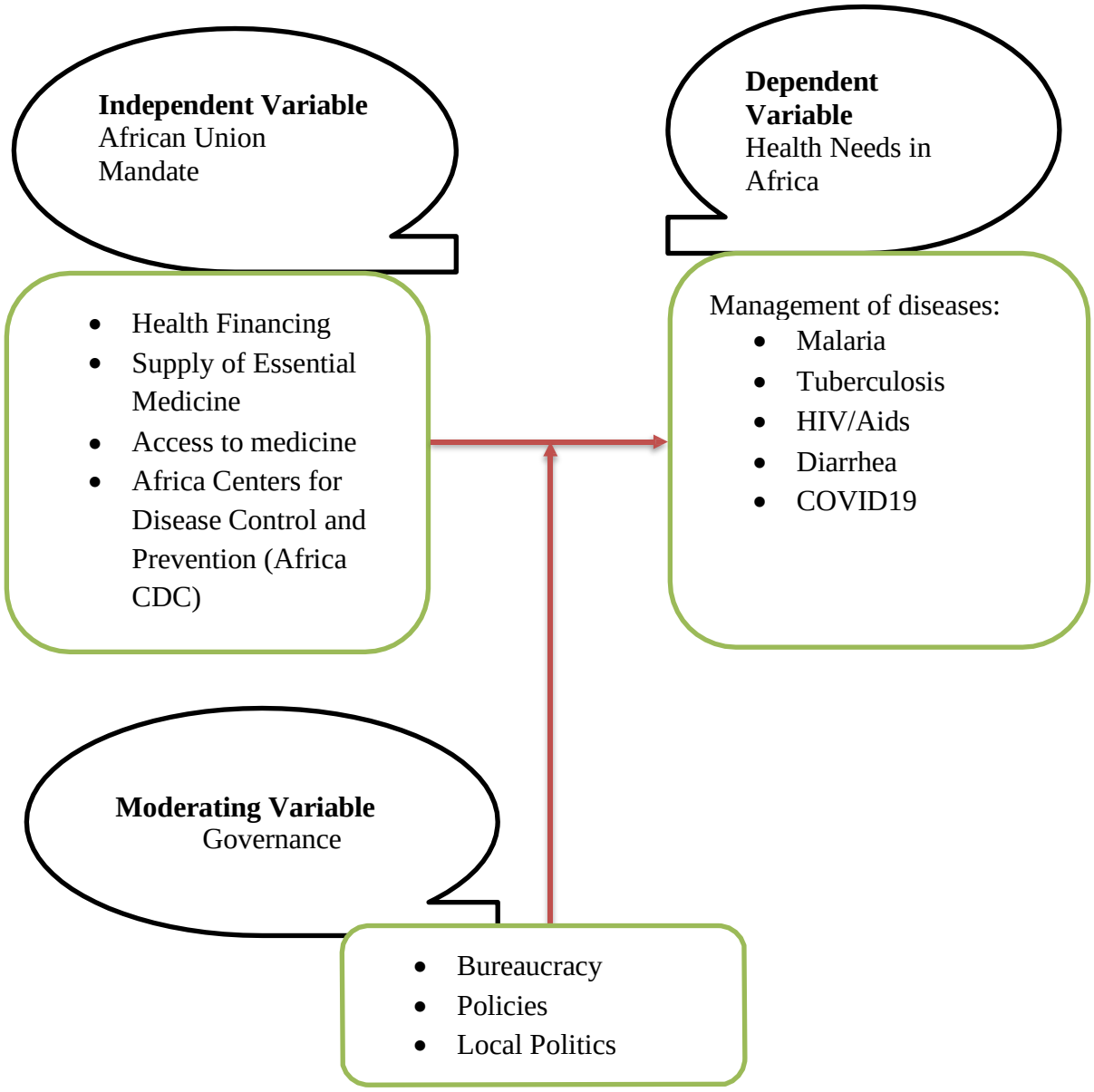

Figure 1. Conceptual Framework.

The Cause-Effect Relationship Between the Variables

Inadequate funding leading to irregular drug supply hinders healthcare institutions in Africa from providing proper treatment, affecting the ability to address diseases like Malaria and pneumonia. Sufficient essential medicine supply is crucial for improved health outcomes and meeting 21st-century health needs. Government policies can impact medicine supply, with restrictions causing shortages. Access to medicine is vital, but bureaucratic hurdles can hinder a country's attainment of health goals. Governance plays a key role, with delays in medicine supply leading to preventable deaths. Africa CDC aids nations in health emergency preparedness, vital for achieving health goals and minimizing mortality rates. Partnering with member states enhances response capabilities, while local politics can influence a country's participation in the African CDC.

2.5. Summary

Overall, the goal of the literature review chapter was to give the researcher a more comprehensive understanding of the topic under investigation, provide evidence of what other scholars have found about the phenomena being investigated, and identify the existing research gap that the current study seeks to fill. The literature reviewed identified health financing as one of the primary functions of the systems of health, which promotes Universal Health Coverage (UHC) improvement (Dieleman et al., 2018). Concerning health financing and health outcome, the literature reviewed revealed that even though there exists a questionable association between certain health indicators and public health spending, the existing evidence is not sufficient to draw a clear conclusion (World Bank, 2003). The studies collectively indicate that healthcare financing, whether through public or private sources, has a significant impact on health outcomes in African

countries (Dieleman et al., 2018; Sparkes et al., 2019; Weibo & Yimer, 2019). Increased healthcare spending is associated with improvements in life expectancy, reductions in infant and maternal mortality rates, and overall better health outcomes. Thus, governments play a crucial role in healthcare financing, and increased public health expenditures positively correlate with improved health outcomes. The research suggests that higher government spending on healthcare is linked to increased life expectancy and reduced mortality rates (Dieleman et al., 2018). Different categories of healthcare expenditure, such as out-of-pocket spending, government spending, and external financing, have varying impacts on health outcomes. For instance, out-of-pocket spending has been associated with a significant positive effect on life expectancy (Owumi & Alfred, 2021). While economic growth is important for overall development, studies indicate that its direct impact on health outcomes may not be as strong as healthcare financing (Ogunjimi & Adebayo, 2018). Health financing seems to have a more direct and significant impact on health indicators. Also, it is evident that the quality of governance in a country can influence the effectiveness of healthcare financing. Well-governed countries tend to experience greater positive impacts from their healthcare investments than those with weaker governance. Some scholars also consider environmental factors, such as pollution, which can affect health outcomes (Nwani et al., 2018). Addressing environmental issues can indirectly contribute to improved health outcomes. The studies collectively recommend increased government investment in healthcare, the establishment of social health insurance schemes, and the reduction of out-of-pocket payments. These measures aim to enhance health outcomes and ensure equitable access to healthcare services. As such, the current study sought to further examine how health financing impacts health outcomes in African countries. Additionally, all the studies examined that relate to the impact of health financing on

health outcomes were limited to the use of quantitative data (Abass, 2016; Akinci et al., 2014; Azodi et al., 20; Raeesi et al., 2018; Rana et al., 2018; Owumi and Alfred, 2021; Syed & Jabeen, 2019). This implies that qualitative studies examining the effect of health financing on health outcomes are limited in scope. To add to this area of study, the current study involves a qualitative assessment of how health financing impacts health outcomes in Africa.

Regarding the supply of essential medicine and health outcomes, the literature reviewed revealed that EM are chosen due to their evidence of relative cost-effectiveness, efficiency and safety, and their relevance to public health (Kar et al., 2010). The concept of essential medicines emerged from the military tradition of providing therapeutic supplies during combat (Duong et al., 2015), and the WHO introduced a list of Essential Medicines (EMs) to address disease burdens and health needs (Duong et al., 2015). However, global access to EMs remains a challenge, with around two billion people lacking access (Ozawa et al., 2019). Studies have explored various aspects of EM supply and its impact on health outcomes. Roth et al. (2018) investigated expanding access to EMs and identified barriers like limited access to new medical instruments and regulatory challenges. Awucha et al. (2020) examined COVID-19's impact on EM access in Nigeria. Yang, Huang, and Liu (2017) studied EM distribution in Hubei, China, while Kefale and Shebo (2019) assessed EM availability in Ethiopian healthcare. Lubinga et al. (2014) studied pharmacy worker deployment in Malawi. Armstrong-Hough et al. (2020) studied EM availability for non-communicable diseases in Uganda. Morgan, Yau & Lumpkin (2017) analyzed pharmaceutical registration fees' impact. These studies emphasize the need for innovative approaches to improve EM accessibility and address disparities, thus enhancing healthcare outcomes globally. Usually, EM is intended to be accessible by all operational health systems at every time in the correct dosage

forms, in sufficient amounts, and with sufficient information and assured quality. In a study to investigate the cost and availability of essential medicines for non-communicable diseases in Uganda, Armstrong-Hough et al. (2020) urged that there was a need for standardized and continuous monitoring to characterize the availability and cost of essential medicines better. The current study's research gap was drawn from these concluding remarks as the study will explore the availability of essential medicines based on their availability and cost to allow the investigator to determine how access to essential medicine across the world affects the health outcomes within African nations. Additionally, Amino et al. (2021) undertook a literature review-based study to explore the potential pathways and the impacts of COVID-19 on the accessibility, safety, and affordability of EM and vaccines for UHC IN African nations. The current study aimed to further Amino et al.'s (2021) study by exploring how the impacted supply of essential medicines by COVID-19 has affected the achievement of 21st century health needs. Furthermore, Yang et al. (2017) explored essential medicines' distribution to institutions of primary care in Hubei, China. Even though the researchers examined how centralized procurement affects essential medicines distribution arrangements, they did not further explore how this affects the health outcomes, hence providing the current study with a research gap. Additionally, the current study will further Kefale, and Shebo (2019), who explored essential medicine availability and PIM practices at institutions of health in Adama town, Ethiopia, by exploring how the low availability of essential medicines affects AU achievement of twenty-first-century health needs in Africa.

The review also showed that access to medicine is a critical concern in African countries due to the high prevalence of communicable and non-communicable diseases, coupled with limited local pharmaceutical production. More than 90% of global malaria deaths occur in Africa, and

over 70% of people with HIV/AIDS are on the continent, highlighting the substantial need for medications (World Health Organization [WHO] Africa, 2021). However, Africa only produces 3% of global medicines, resulting in heavy reliance on imports. The concept of access to medicine encompasses multiple dimensions, including accessibility, availability, acceptability, quality, and affordability (Wirtz et al., 2016). Challenges in each of these dimensions hinder access in Africa. Factors such as poverty, economic power, political systems, and weak healthcare infrastructure contribute to limited access (United Nations [UN], 2021; WHO Africa, 2021). The lack of access to essential medicines exacerbates Africa's disease burden, where millions of deaths occur each year due to treatable diseases (Pheage, 2017). Suboptimal medicine access affects disadvantaged groups the most, including children, women, and the poor (Pheage, 2017; Quick et al., 2005). Efforts to improve access involve regional collaborations and initiatives, such as the African Medicines Agency (AMA) and the African Medicines Regulatory Harmonization (AMRH) initiative (African Union [AU], 2020). However, factors like corruption, lack of resources, and skilled personnel, as well as regulatory challenges, continue to impede progress (Sillo et al., 2020). The COVID-19 pandemic exposed Africa's vulnerability to disruptions in medicine supply chains and highlighted the need for self-reliance in pharmaceutical production (Adebisi et al., 2020). Efforts to boost local manufacturing and strengthen healthcare systems are crucial to ensuring access to quality medications in Africa. Pheage (2017) defines access to medicine as having constant access to medicine at an affordable price. Ozawa et al. (2019) further explain that access to medications within health systems entails five dimensions: geographical availability, acceptability, affordability, availability, and quality. The literature reviewed revealed that access to medicines is a human right and is vital to the full realization of the right to health (UN, 2021).

The literature review on access to medicine and health outcomes revealed that ninety-five percent (95%) of all the medications utilized in African countries are imported (WHO Africa, 2021). This indicated the African continent's vulnerability during times of pandemics or interrupted importation chains. The literature reviewed further revealed that most African countries face limited access to medicine (Pheage, 2017). Existing studies have examined how lack of access to medicine makes Africans vulnerable to the three major killer diseases: Malaria, tuberculosis, and HIV/AIDs (Pheage, 2017; UN, 2017). The current study will further these studies by examining how the limited access to medicine impacts AU's achievement of 21st-century health needs in African nations. Furthermore, the vulnerability of African countries with regard to access to medications was fully exposed during the era of the COVID-19 pandemic, which led to new insights into the social problem (Adebisi et al., 2020). This has led to a need to further examine other impacts of lack of access to medicine on health outcomes. UN (2021) further urge that improving access to medicines is a complex concept intertwined with governance, economic power, and the health systems. However, researchers are yet to explore the mediating role of governance in the relationship between access to medication and health outcomes. This study aims to fill this gap. Literature concerning the effect of access to medicine is limited in scope. The current study will add to the scope of this literature, providing future scholars with broad literature to support their findings.

Additionally, research reveals in resource-limited nations, inadequate integration of health care is linked to human resource management issues and weak governance (Petersen et al., 2017). Mwisongo and Nabyonga (2016), in their study that examined African Global Health Initiatives (GHIs), also proposed that to ensure effective functioning of GHIs, there is a need to improve

leadership and ensure proper articulation of the goals of a country. The first goal of this initiative is to examine whether governance positively influences health outcomes. The goal of this study is to fill this research gap by exploring how governance affects the achievement of twenty-first-century health needs in Africa. Besides, results on how governance impacts health outcome have yielded mixed results. For instance, in a literature review-based study conducted by Ciccone et al. (2014) to determine the nature of the relationship between governance mechanisms and health outcomes in LMICs, findings revealed that the nature of the relationship between governance mechanisms and health outcomes varies across studies. Of the reviewed studies, nine studies indicated that governance has a direct positive and significant relationship with health outcomes. Five of the reviewed studies showed an indirect positive and significant relationship between health outcomes and governance mechanisms, while six of these studies had mixed results. Four studies reported no relationship between governance and health outcomes. The last two studies had inconclusive results concerning the relationship between governance and health outcomes. Thus, there is a need to further examine how governance impacts health outcomes. Olafsdottir et al. (2011) also recommend that governance is an indicator that should be investigated more in terms of its influence on health outcomes beyond under-5 death rates. Additionally, in a study to examine how public health expenditure and governance impacts health outcomes in Maylasia, Ahmad, and Hasan (2016) recommended that future researchers need to assess other factors that affect health outcomes when exploring how governance influences health outcomes. This study aims to fill this research gap by exploring the effect of state governance on the attainment of twenty-first century health needs in Africa, along with other factors that affect health outcomes

such as access to quality, safe, and efficacious quality medicine, Africa CDC, and supply of essential medicines in Africa.

The literature review revealed that the Africa CDC was established to help enhance Africa's development of public health (Nkengasong et al., 2017). Africa CDC was also established to facilitate movement across African nations to recognize the possibility of the re-emergence of pathogens and existing threats of emerging and endemic infectious illnesses. Additionally, Africa CDC was established to help Africa with some health problems prevalent in the continent, which do not prevail in the developed nations since Africa relies on help in dealing with such health crises. According to Nkengasong et al. (2017) and Watt (2019), establishing Africa's CDC was the continent's closest sustainable solution to its problems. Varma et al. (2020) further define other goals of the Africa CDC, which entail strengthening the capacity and capability of public health institutions within African nations and strengthening the partnerships to identify and respond quickly and effectively to outbreaks and threats of diseases based on data-driven programs and interventions. Besides, in Africa, CDC supports AU member states to provide integrated and coordinated solutions to the shortfalls evident in their public health infrastructure, human resource capacity, disease surveillance, laboratory diagnostic, and preparedness and response to health emergencies and disasters (Africa CDC, n.d.). Despite the goals of the Africa CDC, scholars are yet to examine how Africa CDC has impacted the accomplishment of twenty-first century health needs among African countries. This has created a research gap for the current study, exploring how Africa CDC has impacted health outcomes in Africa. Furthermore, to the best of the researcher’s knowledge, scholars have not conducted empirical studies on Africa CDC and health outcome in Africa. Most of the existing studies focus on the role of the Africa CDC in epidemic

preparation, control, and prevention in various African nations. The current study seeks to examine how Africa CDC impacts health outcomes.

CHAPTER 3: RESEARCH METHOD

The African nations' health systems are in crisis (Chiedozie, 2016). The effects of insufficient and inefficient working modules and the poor and dilapidated infrastructure on human health are cause for serious concern. Also, research reveals that Africans' life expectancy has been severely affected by communicable and parasitic diseases such as malaria, AIDS, tuberculosis, and different types of influenza (DeLaet & DeLaet, 2015). These illnesses have been completely eradicated in developed countries. In addition, studies show that millions of people throughout the world lose their lives every year to preventable illnesses, with more than five million deaths being attributed to tuberculosis, malaria, and HIV/AIDS (DeLaet & DeLaet, 2015).

The study by Azevedo (2017) established that the onset of the diseases in the developed countries, mainly in Africa, is attributed to failed healthcare systems in service delivery, leadership and governance, availability of medicines and vaccines, funding opportunities, and health workforce. Importantly, the leadership and governance component evaluates the health sector management, national management legislative framework, parts of national programs on health sector management, and the national institutional framework for multisectoral management. Health sector management finance strategies at both the national and subnational levels are essential components of sustainable financing. Risk communication and emergency preparation data systems also fall under the category of information (Azevedo, 2017). Hospital management during mass casualty crises, emergency medical services (EMS) system management, operational and logistical support, and response capabilities and capacity are all part of the service delivery process.

Research reveals that although the African Union (AU) was founded to steer the continent toward sustainable growth and development, it has fallen short of its goal in many areas, including meeting the needs of ordinary Africans in healthcare (Tieku, 2019). WHO (2021) reports that Africa has between 60% and 90% of the world's HIV/AIDS and malaria cases, respectively. In addition, in 2017, over two-thirds of all maternal fatalities occurred in Sub-Saharan Africa (WHO, 2019). In addition, the COVID-19 pandemic has worsened Africa's health problems, heightening the need to find effective answers to these issues (Kuehn, 2021). Inadequate human resources, poor leadership and administration, and a lack of financial assistance are the three main problems plaguing Africa's healthcare sector. Oleribe et al. (2019) further stress that in recent years, the healthcare systems in Africa have suffered from a wide range of man-made difficulties, such as financial, institutional, technological, human resource, and political shifts. As a result, many African countries lack the resources necessary to provide adequate healthcare to their citizens. Since good health is essential to everyone, these problems must be solved permanently.

The African continent's journey towards addressing 21st-century health challenges is fraught with intricate complexities and formidable obstacles. Despite commendable efforts to combat diseases, improve healthcare infrastructure, and enhance access to essential services, the region continues to grapple with a persistent burden of infectious diseases like malaria, HIV/AIDS, and emerging threats, as well as an escalating incidence of non-communicable diseases such as cardiovascular disorders and diabetes (Minja et al., 2022). Disparities in healthcare access and quality, economic inequalities, and infrastructural limitations further compound these health challenges. In the midst of these challenges, the role of the AU emerges as pivotal, given its mandate to promote unity, development, and cooperation among African nations (Eze & Wal,

2020). However, a pressing issue is that despite the AU's ambitious health-related goals, questions persist regarding the tangible impact of its initiatives on the ground. Neuenschwander et al. (2023) asserted that the efficacy of the AU's interventions or health initiatives in achieving substantial and sustainable health improvements across the continent remains a subject of scrutiny. Moreover, an essential factor that can determine the success or failure of these health interventions often remains understudied (Neuenschwander et al., 2023). The intricate interplay between governance structures, policies, and decision-making processes in shaping healthcare outcomes is a critical yet underexplored facet of the equation.

Further, the AU has undoubtedly achieved notable successes that have had far-reaching impacts across the continent. One of its most significant accomplishments has been its efforts in maintaining peace and stability in Africa (Tieku, 2019). The AU's peacekeeping missions, conflict resolution mechanisms, and diplomatic interventions have played a crucial role in mitigating conflicts and preventing the escalation of violence (Tieku, 2019). These efforts have helped to save lives, protect communities, and create an environment conducive to development and progress. Moreover, the AU's influence on African leaders to adopt more liberal and democratic practices cannot be understated. Through peer reviews and engagements, the AU has encouraged member states to adhere to democratic principles, uphold human rights, and promote good governance (Izugbara et al., 2020). While progress in this area has been uneven across different countries, the AU's efforts have contributed to the overall shift towards more accountable and participatory governance in various parts of the continent (Izugbara et al., 2020).

Furthermore, the AU's continued reliance on foreign aid has raised concerns about its ability to assert its independence and prioritize the interests of its member states (Madise & Isike,

2020). This dependency has led some critics to question the organization's autonomy in shaping its own agenda and effectively representing the diverse needs and aspirations of Africa (Madise & Isike, 2020). This shows that the African Union's successes in peacekeeping, promoting democratic values, and addressing critical issues such as refugee management are commendable achievements that have positively impacted the continent (Tieku, 2019). However, the organization faces challenges in meeting the needs of ordinary Africans, fostering inclusive decision-making, holding leaders accountable, and reducing its dependency on foreign aid (Madise & Isike, 2020). These shortcomings underscore the complex dynamics at play within the AU and make it a compelling subject for research in Africa as scholars and policymakers seek to understand and address these challenges to pave the way for a more prosperous and inclusive future (Madise & Isike, 2020).

This research study thus aimed to address this gap by delving into the mediating role of governance in the African Union's efforts to meet the diverse health needs of the 21st century in Africa. It focuses on an in-depth exploration of the intricate interplay between the African Union's initiatives and the pursuit of 21st-century health needs in Africa. At the heart of this exploration lies the mediating role of governance, a dynamic force that can facilitate or impede the translation of policy aspirations into tangible health outcomes. Governance encompasses not only the political dimensions but also regulatory frameworks, policy formulation processes, resource allocation mechanisms, and the engagement of diverse stakeholders (Nutbeam & Muscat, 2021). The relationship between effective governance and health outcomes is a symbiotic one; while strong governance structures can bolster health systems, improved health outcomes can, in turn, contribute to more stable and prosperous societies (Madise & Isike, 2020).

Moreover, since this research focuses on unraveling the interaction between AU initiatives and health outcomes, governance emerges as a critical dimension. Governance structures can either enable the realization of AU's health goals by promoting cooperation, transparency, and efficient resource utilization, or they can pose barriers through inefficiency, corruption, and misallocation. Thus, the mediating role of governance serves as a crucial aspect within the broader narrative of African health development, bridging the AU's vision with the lives of the individuals it aims to impact.

The focus of this study was to evaluate the roles of AU in response to 21st-century health needs in Africa. This made a qualitative approach the best suited method to investigate the phenomenon at hand. The qualitative research method was ideal for this study since it is an interpretive, naturalistic, and emergent approach to studying human experiences and social sciences (Aspers & Corte, 2019). This method was also adopted in this study because it assists in describing and interpreting using multiple data sources. The qualitative research design employed in the study was grounded theory design, which was found suitable to conduct extensive exploration of the phenomenon.

This chapter describes the research approach, with detailed discussions on qualitative methods and grounded theory design and their suitability in this study. A qualitative grounded theory approach suited the study because it helped performed comprehensive exploration of the phenomenon under investigation (Ridder, 2017). The chapter is organized into five sections, with the first Section outlining the research approach and design adopted for the study. This section highlights the selection of qualitative research method and grounded theory design as the suitable

methodological selection of the study. The section provides a detailed rationale for selecting the approach in relation to the problem in question and research questions.

The second section of chapter three covers the population and sample of the research study, and the following Section outlines the instrumentation of the research tools. Section four covers the study procedures and ethical assurances, while the fifth covers the data collection procedures. A comprehensive summary that ties the entire chapter together is also provided.

3.1. Research Approach and Design

A research method involves the techniques and approaches or a framework that is used to combine various research elements to address the research questions in a study (Busetto et al., 2020). The three main research methods include quantitative, qualitative, and mixed-methods research. The study's objectives dictate the type of research approach to be used. A suitable research approach should be used in order to meet all of the study's objectives. The choice of the approach for this study is supported by the following Table 3.1 showing the features of qualitative and quantitative research approaches.

Table 3.1

Characteristics of Qualitative and Quantitative Research Methods

Qualitative Research	Quantitative Research
Induction	Deduction
Purposes ▪ Generates theory from observations. ▪ Oriented to discovery, exploration. Procedures ▪ Emergent design. ▪ Merges data collection and analysis.	Purposes ▪ Tests theory through observations. ▪ Oriented to cause and effect. Procedures ▪ Predetermined design. ▪ Separates data collection and analysis.

Subjectivity	Objectivity
Purposes ▪ Emphasizes meanings, interpretation. ▪ Tries to understand others' perspectives. Procedures ▪ Researcher is involved, close to the data. ▪ Researcher is the "research instrument...	Purposes ▪ Emphasizes things that can be measured. ▪ Results do not depend on beliefs. Procedures ▪ Researcher is detached, distant from the data. ▪ Relies on standardized protocols.
Context	**Generality**
Purposes ▪ Emphasizes specific depth and detail. ▪ Analyzes holistic systems. Procedures ▪ Uses a naturalistic approach. ▪ Relies on a few purposively chosen cases.	Purposes ▪ Emphasizes generalization and replication. ▪ Analyzes variables. Procedures ▪ Uses experimental and statistical controls. ▪ Works across a larger number of cases.

Source: Morgan, (2017, p.48).

The qualitative research method was an ideal research method for this study since it is an exploratory strategy that delves into the study topic through the views, perceptions, and lived experiences of people either affected or knowledgeable about the phenomenon being investigated (Leppink, 2017). Also, a qualitative research design was suitable due to its ability to answer a question by gathering rich and thorough information about the social situation in question via the feelings, thoughts, and perceptions of the individuals affected by it (Abutabenjeh & Jaradat, 2018; Maxwell, 2019). The qualitative research design was selected for this study due to its capacity to provide in-depth insights into the social context under investigation through the emotions, thoughts, and perceptions of individuals affected by it (Maxwell, 2019). Additionally, Abutabenjeh and Jaradat (2018) describe the qualitative research approach as involving the collection and analysis of textual data to understand opinions, concepts, or experiences. Hence, this research

approach was chosen to collect textual data on the African Union's contribution to addressing the 21st-century health needs of African countries. Thus, this qualitative research approach was chosen to gather textual data on AU's contribution to African countries' 21st-century health needs. Supporting this statement, Tenny et al. (2017) elucidate that a qualitative research approach allows the researcher to go deeper into extensive data sources and obtain more information, thus gaining a comprehensive understanding of the topic under study. Also, the qualitative approach offered a comprehensive and nuanced approach that aligns seamlessly with the multifaceted nature of healthcare systems, governance dynamics, and the intricate interplay between essential medicine supply and health outcomes in Africa. It allowed for a deep exploration of the contextual factors that influence essential medicine supply and its impact on health needs in Africa. By engaging with selected member states, it was possible to capture detailed information, providing a holistic understanding of the challenges and opportunities within the healthcare landscape in African continent.

Secondly, a qualitative research approach was ideal for this study since it is an emergent, inductive, naturalistic, and interpretive method well-designed to study humanities and social sciences (Yilmaz, 2013). The current study is a social science that examines the contribution of AU towards the attainment of the 21st-century health needs in Africa. In addition, this study's research approach was well-suited for this study since it enables the investigator to see situations, people, and phenomena in their native habitats, where they may more fully grasp the context in which these experiences are understood (Kim et al., 2017). The researcher was able to evaluate AU and its contribution to meeting the healthcare demands of the twenty-first century in various African countries. Besides, the study involved intricate relationships between essential medicine

supply, governance structures, and health outcomes. Qualitative methods excel in unraveling these complex interdependencies, enabling you to uncover not only the "what" but also the "why" behind these relationships (Kim et al., 2017). Using document analysis helped study underlying factors that drive or hinder effective medicine distribution and its effects on health needs.

Qualitative research designs are renowned for delving into human experiences and societal issues (Creswell & Creswell, 2017), making them ideal for investigating the AU's response to inadequate healthcare in African countries. These designs offer flexibility in reporting, aligning well with the aims of this study. Additionally, qualitative studies emphasize practical techniques, which complement the multifaceted nature of the research topic.

Further, the essential medicine supply in Africa is influenced by cultural, social, political, and economic factors unique to the continent. Qualitative research proved advantageous in capturing the nuanced contextual factors that quantitative methods may overlook (Leppink, 2017). This method facilitated the exploration of insights aligned with the realities of African healthcare systems, thereby contributing to culturally sensitive policy recommendations. Additionally, qualitative research enabled the collection of diverse and rich data sources, revealing hidden patterns, unforeseen insights, and emerging themes not initially anticipated. Given that this research aimed to elucidate the role of essential medicine supply in meeting 21st-century health needs, the qualitative approach supported theory development by iteratively generating and refining concepts, relationships, and theoretical frameworks directly from the data. Consequently, it resulted in more comprehensive and contextually relevant explanations of the research problem. Furthermore, the qualitative methodology harmonized with the pragmatic objectives of this study, providing insights directly applicable to policy formulation, healthcare practice, and strategic

decision-making. Actionable recommendations derived from qualitative findings encompassed improvements in medicine distribution, addressing governance challenges, and enhancing health outcomes across Africa.

The researcher did not choose quantitative or mixed-methods research for a number of reasons. Firstly, the quantitative approach was not ideal for this study since it utilizes numerical data to test hypotheses in the study, which was not the focus of the present study. Scholars apply a quantitative approach when examining the relationship between variables of interest, which is established by testing the study hypothesis (Creswell & Creswell, 2017; Bloomfield & Fisher, 2019). When using a quantitative approach, the study variables yield numerical data that is analyzed using statistical methods (Creswell & Creswell, 2017). However, this study focused on analyzing the work of other scholars who had looked at the same or a related issue, making quantitative approach inappropriate because the study did not seek to quantify and examine the nature of underlying causal links between variables. Also, the quantitative method was not appropriate because the objective of this study did not involve any theory testing. Quantitative researchers aim to measure and analyze causal relationships between variables (Bloomfield & Fisher, 2019). However, in contrast to this quantitative approach, the study at hand sought to deepen understanding of a phenomenon by examining the perspectives of other researchers who have investigated similar topics. As Gunnell (2016) asserted, qualitative research is particularly effective for such purposes, allowing for a nuanced exploration of views, opinions, and perspectives. Given that the study did not involve measuring relationships between variables, quantitative research methods were considered unsuitable for the research objectives. Therefore, the present study opted for a qualitative approach, recognizing its capacity to provide rich and

detailed insights into the phenomenon under investigation. This qualitative methodology enabled the researchers to immerse themselves in the study, allowing for a thorough examination of the African Union's contribution to addressing the 21st-century health needs of African nations based on secondary data. By engaging in qualitative analysis, the researchers could uncover nuanced perspectives and uncover the complexities of the AU's role in healthcare provision across the continent. This approach facilitated a deeper understanding of the intricacies involved and offered valuable insights that quantitative methods alone may not have been able to capture. Thus, while quantitative research focuses on quantifiable relationships, qualitative research provided the appropriate framework for this study, allowing the researchers to explore and interpret the multifaceted nature of the research topic in greater detail. In this study, the researcher needed to be a part of the study to understand the contribution of AU towards the African nations' attainment of the 21st-century health needs based on secondary data. Hence, quantitative research was deemed unsuitable for this study. As the current investigation did not entail hypothesis testing, a quantitative approach was not appropriate. Unlike quantitative methods, which focus on quantifying and scrutinizing the nature of underlying causal relationships between variables, the aim of this research was to deepen understanding of a phenomenon by analyzing the contributions of other scholars who had examined similar or related issues. According to Gunnell (2016), qualitative studies offer the most fruitful avenue to achieve this objective. Since the research did not involve the quantitative measurement of connections between variables, a quantitative approach could not be utilized in this study. Usually, mixed-methods research is applied in situations where the researcher must combine both qualitative and quantitative approaches to better understand the phenomenon under study and investigate a variable that cannot be investigated

using a single method (Dawadi et al., 2021). Creswell and Creswell (2017) further add that researchers that use mixed methods gather both qualitative and quantitative data in order to better understand their study topic. Collecting quantitative data for this study would have been costly and time-consuming because the study involved examining AU's contribution towards the achievement of 21st century needs in a total of 20 African countries. Since this topic could still be explored without the numerical data, the researcher opted to use only a qualitative approach. Also, due to a lack of time and funds, mixed-method research was not feasible for this investigation.

Various research designs exist under the qualitative approach. They include ethnography, case studies, and grounded theory. This study employed a grounded theory. For this study, the researcher sought to use grounded theory to develop theories to explain the daily contribution of AU towards the attainment of 21st-century health needs in African nations. Also, the researcher chose to adopt this research design to determine how AU contributes to the achievement of 21st-century health needs in African nations through sustainable financing, leadership and governance, supply of essential medicines, access and adequate supply of safe, efficacious, and quality medicine, and establishment of Africa CDC.

A total of 55 countries makes up the African Union, which is divided into the Central, East, North, South, and West regions. Different countries from each of these five areas were purposively chosen for the study. The chosen nations were used to analyze the relationship between the African Union and the fulfillment of Africa's health requirements, with governance as a moderating element. Many scholars have turned to case studies in order to better understand the structure of an event or phenomenon by basing their investigation on actual examples (Rashid et al., 2019). Thus, the researcher may have a more organized and rational perspective on occurrences via the

use of case studies in terms of data gathering, analysis, and presentation. Because of this, the researcher is better able to analyze the situation and determine what aspects need greater attention in future studies. Furthermore, case studies provide insight into behavioral patterns, which Yazan (2015) argues, allows the researcher to go beyond quantitative methods. Case studies also allow the researcher to use both quantitative and qualitative methods in data. However, since the present study did not focus on exploring people's perceptions or lived experiences, it was unfit as the appropriate method. Instead, it was necessary to consult a wide variety of existing sources in order to draw valid conclusions about the AU's efficiency. For this reason, the grounded theory research design was applied because it is a technique that guarantees data collection from a wide variety of sources. The use of grounded theory in research also allowed for the construction of theories (Wiesche et al., 2017). For these reasons, the researcher opted to use a grounded theory over the other research designs used in qualitative studies. Also, grounded theory design is used by researchers to determine the issue's setting, causes, and effects, ultimately leading to the development of a workable theory (Wiesche et al., 2017). The researcher did seek to develop a theory; thus, this research design was considered appropriate for this study.

Therefore, using a grounded theory allowed the researcher to summarize the existing studies about the contribution of AU towards the attainment of 21st-century health needs. This research design allowed the researcher to identify the most relevant and appropriate archival data from past studies, which the researcher then used to develop main concepts for generating themes to address the research questions. The approach focuses on the utilization of a pre-existing collection of facts to develop an epistemological or philosophical perspective of the subject under research (Rashid et al., 2019). Thus, the grounded theory design was ideal for this study because

of its adaptability in making use of pre-existing data for theory development. Also, a grounded theory was ideal for this study since the researcher intended to utilize secondary data to perform a multi-faceted and detailed exploration of the contribution of AU toward the achievement of 21st-century health needs among different African nations. The selection of grounded theory design, particularly in the context of utilizing secondary data, was a strategic and appropriate choice that aligned harmoniously with the specific nature of the research question, data availability, and qualitative research objectives. The grounded theory design is adept at uncovering intricate relationships and underlying patterns within data (Wiesche et al., 2017). Thus, the research questions of this present study delved into the multifaceted interplay between the African Union's health initiatives, governance mechanisms, and health outcomes in Africa. This made Grounded theory the best design because it allowed for systematic analysis of secondary data to unearth hidden connections and emergent themes that contribute to a deeper understanding of these complex relationships.

Besides, using secondary data within a grounded theory framework helped build and refine theoretical constructs based on pre-existing information. This approach was well-suited to the study, as it sought to develop a comprehensive understanding of the mediating role of governance in the context of 21st-century health needs in Africa. By immersing in secondary data sources, the design helped derive new insights and constructs that contribute to the theoretical framework.

Grounded theory design is also adaptable to different data sources and contexts. Even when working with secondary data, this methodology allows researchers to flexibly adapt to the unique context of the research topic (Wiesche et al., 2017). Researchers can adjust their coding, categorization, and analysis techniques to ensure that the findings remain contextually grounded

while deriving new theoretical insights from the data. Thus, since the present study encompasses governance dynamics, health outcomes, and the African Union's health initiatives, secondary data sources provided information from various dimensions, including policy documents, reports, and academic papers. This made Grounded theory the best design as it helped integrate these multidimensional data sources to create a holistic understanding of the mediating role of governance in achieving 21st-century health needs.

The researcher did not intend to utilize phenomenological, ethnography, or case study research designs. Ethnographic research design is used by researchers to study the culture of a group (Moisander et al., 2020). Since the researcher was not interested in investigating the customs and practices of a specific ethnic or cultural group, an ethnographic approach seemed inappropriate for the planned research. Also, case study designs were not appropriate for this study. Rashid et al. (2019) reveal that case studies are utilized by scholars interested in qualitative studies. This is because it allows the researcher to use multiple sources of data to explore a phenomenon in a certain context. Mohajan (2018) further explains that scholars utilize case studies when examining and explaining a phenomenon within the daily context of occurrence. The goal of a case study design in qualitative research is to produce new ideas about the issue at hand by analyzing and summarizing material found in pre-existing sources such as records, reports, and images; hence, it was not appropriate for the present study (Lucas et al., 2018). Furthermore, Tobi et Kampen (2018) urge that a case study design is suitable for answering what, how, and why questions along with capturing explanatory information, which made it unfit for the present study. However, the case study design does not seek to address what, how, and why questions through theory development; hence, it was found unsuitable for the present study. Phenomenological researchers are helpful in

examining how people interpret their own experiences (Thompson et al., 2016). Since this study sought to use secondary data, this research design was not suitable for this study. Also, the phenomenological research design was disregarded for this study since the researcher did not intend to explore the lived experiences of a group of people or organizations in a real-world setting.

3.2. Population and Sample of the Research Study

This section presents the target population of the study, the sample, the sampling strategy, and the sample size used. The population refers to the entire group of individuals, items, or entities that share a common characteristic and are of interest to the researcher. It is the larger group that you want to draw conclusions about (Thacker, 2019). However, studying an entire population might be impractical, costly, or time-consuming in many cases. Therefore, researchers often work with a subset of the population, known as a sample (Thacker, 2019). Thus, in the present study, the target population for this study was the African Nations that make up the AU. The AU comprises 55 member states, which represent all African nations from the five (5) geographic regions of the African Union, which are East Africa (14 countries), West Africa (15 countries), North Africa (7 countries), South Africa (10 countries), and Central Africa (9 countries). The Member States are divided into five regions, as summarized in Table 3.2 below *(Please see Appendix for the AU Member States in each region).*

Table 3.2

Target Population

AU countries (Per region)	**Total No**
East Africa	14
West Africa	15
North Africa	7
South Africa	10

Central Africa	9

Source: (African Union, 2022)

Notably, the target population includes people, events, or objects of different types that the investigator is interested in studying to conclusions. Its scope might be either broad or narrow. However, collecting data from all target population members is impracticable, whether limited or comprehensive (Asiamah et al., 2017). As a result, for data collection purposes, a subgroup of the population known as the sample is chosen. Supporting this statement, Asiamah et al. (2017) urge that qualitative scholars select a smaller selection from the target population while ensuring that the sample is composed of equitably eligible respondents. The results of the findings of the appointment are generalized to represent the entire population. The selection should be large enough to answer the research question. Therefore, the target population (five AU regions) was used to select the 20 countries that served as the sample size of the study in order to explore the contribution of AU towards the attainment of 21st-century health needs among African nations. In particular, the target population was African countries that were adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS. A smaller sample size of 20 countries was used as the appropriate sample because it was found to be enough to obtain detailed information about African continent, capturing and comparing data from across African countries.

Also, the qualitative grounded theory approach values smaller sample sizes that lead to saturation. This approach allows researchers to dive deep into the data, understand the complexity of experiences, and develop theories grounded in the participants' perspectives (Vasileiou et al., 2018). Saturation is a crucial concept in qualitative research, particularly in approaches like grounded theory. Saturation occurs when new data collection and analysis no longer yield

additional insights or information that contribute significantly to the emerging theory (Vasileiou et al., 2018). In other words, saturation indicates that the researcher has collected enough data to capture the range and depth of experiences related to the research topic. At this point, adding more participants to the study is unlikely to provide substantially new insights (Vasileiou et al., 2018). Therefore, selecting 20 countries as the sample size was adequate with a saturation level obtained, for the present study for a more intensive analysis of the data and the emergence of patterns and themes to answer the research questions.

Sampling was performed in this study to minimize bias. Supporting this statement, Sharma (2017) reveals that sampling allows researchers to minimize study errors. Scholars who conduct qualitative studies can efficiently complete the sampling process by specifying the general, target, and accessible populations in a hierarchical order to ensure that the selected participants provide relevant data (Asiamah et al., 2017). A good sample size is selected using different strategies. Strategies used to obtain a representative sample of a population are called sampling strategies, and selecting a strategy depends on the characteristics of a population, significance level, and desired power. The most commonly used sampling strategies are convenience, simple random, stratified random, cluster, and purposive sampling. Convenience is used for the most accessible participants. A simple random sampling technique is used when everyone has an equal chance of being studied. The only difference between stratified random sampling and cluster sampling is that the latter is within naturally occurring subgroups while the other is within predefined subgroups. Purposive sampling is a sampling strategy where a researcher judges before choosing his sample. This sampling technique was adopted because it is well-known for saving time (Rivera, 2019). The quality of data gathered, the cost of data collection, and the time it takes to collect data depend

on the chosen participants. Inappropriate selection of respondents can lead to delays, data quality issues, and extra costs (Rivera, 2019). In qualitative research, sampling is done on purpose since the study subjects must have specialized knowledge and competence about the topic being studied. This present study adopted a multiple-stage purposive sampling technique.

The purposive sampling technique requires that researchers choose a sample size based on their judgment while also taking into account the research's aims and objectives (Etikan et al., 2016). The AU consists of 55 member states across five distinct geographic regions (East Africa, West Africa, North Africa, South Africa, and Central Africa). Thus, purposive sampling allowed for the intentional selection of countries from each of these regions, ensuring a representative sample that captures the diversity in geography and potentially varying health challenges across the continent. The use of purposive sampling is appropriate for the present study as it aligns with the specific characteristics of the AU member states, allowing for strategic selection of cases that would provide in-depth and contextually relevant information. This intentional selection ensured that the study captured the diversity of the AU's membership and effectively addressed the research objectives.

Given the emphasis on the mediating role of governance in the study, purposive sampling allowed for a proper selection of countries with diverse governance structures, policies, and practices. This intentional selection facilitates an in-depth exploration of how different governance approaches influence the AU's effectiveness in addressing health needs. Etikan et al. (2016) reveal that when using purposive sampling, respondents are chosen depending on their capacity to provide the relevant data to address the research questions. The health challenges faced by African nations can vary widely; hence, purposive sampling helped select countries based on the specific

health issues they confronted, ensuring that the study captured a comprehensive understanding of the diverse health landscapes within the AU. Also, purposive sampling was well-suited for this study, where the goal was to gain insights from specific cases that are relevant to the research objectives. In this case, selecting AU member states strategically helped focus on countries with significant experiences, successes, or challenges in the realm of health governance. The sampling approach aligned with the specific goals of the study, allowing for the effective selection of cases that address the research questions. This targeted approach ensured that the selected countries contributed meaningfully to the study's objectives, providing valuable insights into the AU's health initiatives and governance dynamics.

Also, given the expansive nature of the AU with 55 member states, purposive sampling offered a practical approach to managing resources efficiently in terms of time and research capacity. By selecting a subset of countries based on their relevance to the research questions, the study became more feasible without sacrificing depth and richness in the analysis.

The target population for this research was African countries that are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS. Existing literature provides statistical evidence of these diseases in African regions. For instance, relating to Malaria cases, Chanda-Kapata et al. (2022) reported that in the African region, there was a 12% increase in deaths between 2019 and 2020. Regarding HIV/AIDS, González-Alcaide et al. (2020) reported that HIV/AIDS infection poses a significant global public health challenge, which has affected populations worldwide since the 1980s, despite advancements in prevention and treatment programs. The pandemic nature of the disease is particularly pronounced in the African continent, where it has had a profound impact. The researchers established that in 2018, an estimated 37.9 million people in Africa were living

with HIV (González-Alcaide et al., 2020). Among them, 20.6 million resided in Eastern and Southern Africa, 5 million in Western and Central Africa, and 240,000 in the Middle East and North Africa. During the same year, there were approximately 770,000 deaths and 1.7 million new infections globally, with 61% of these new cases occurring in sub-Saharan Africa (González-Alcaide et al., 2020). Notably, more than half of the new cases in Eastern and Southern Africa were concentrated in Mozambique, South Africa, and Tanzania (González-Alcaide et al., 2020). In Western and Central Africa, 71% of new infections were observed in Cameroon, Côte d'Ivoire, and Nigeria. The Middle East and North Africa region experienced two-thirds of its new cases in Egypt, Iran, and Sudan (González-Alcaide et al., 2020).

In this study, different countries were selected from the five (5) geographic regions of the African Union, which are East Africa (14 countries), West Africa (15 countries), North Africa (7 countries), South Africa (10 countries), and Central Africa (9 countries).

Multi-stage purposive sampling was used to select countries from each region. The first step of the multi-stage purposive sampling included clustering mapping, which followed the African Union regional classification of countries. African nations are clustered into five regions: East Africa, West Africa, North Africa, Central Africa, and South Africa. The second step of multi-stage purposive sampling was the selection of countries from each of the five regions. Countries from Eastern Africa were Tanzania, and Kenya, while those from West Africa were Ghana, Burkina Faso, Côte d'Ivoire (Ivory Coast), Senegal, and Nigeria. Countries chosen from Northern Africa were Morocco, Sudan, and Egypt, while those from Southern Africa were Zimbabwe, Zambia, Mozambique, Swaziland, Namibia, Botswana, and South Africa. Equatorial Guinea, DRC, and Cameroon were chosen from the Central region. Thus, a total of 20 countries were

purposively selected to take part in the study. The sample frame for the countries based on purposive sampling is presented in the following Table 3.3.

Table 3.3

Sample Frame for Countries

Selected five geographical regions	**Sampling Methodology**	**Justification of the Sampling strategy**	**Sample size**
North Africa	Purposive	African countries are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS.	3 (Egypt, Sudan & Morocco)
South Africa	Purposive	African countries are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS.	7 (South Africa, Zimbabwe, Zambia, Mozambique Botswana, Swaziland & Namibia)
West Africa (15)	Purposive	African countries are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS.	5 (Nigeria, Senegal, Ghana, Burkina Faso & Côte d'Ivoire).
East Africa (14)	Purposive	African countries are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS.	2 (Kenya, Tanzania)
Central Africa (9)	Purposive	African countries are adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS.	3 (Democratic Republic of Congo, Cameroon & Equatorial Guinea)
Grand Total for sample size			20 countries

3.3. Materials/Instrumentation of Research Tools

This study exclusively relied on secondary data meticulously curated from reputable search engines and academic databases. The data sources encompassed official documents from the AU, reports from international organizations, and scholarly publications. The study leveraged well-established search databases such as Google Scholar, EBSCOHost, ProQuest, Sage Publications, and Emerald to ensure a comprehensive examination. These platforms provided a diverse array of perspectives, enriching the depth of the study's insights. The choice of databases is strategic, considering the varied sources of information they offer, ranging from scholarly articles to official reports, contributing to a nuanced understanding of the AU's health initiatives and governance mechanisms.

The primary research material comprised archival documents from the AU and relevant international organizations. These documents, comprising official reports, policy statements, strategic plans, and publications, formed a critical component of the study. The meticulous planning for accessing archival documents involved a comprehensive strategy outlining specific repositories, databases, and platforms to be utilized. This strategic approach ensured a systematic and thorough retrieval of relevant documents, emphasizing the commitment to rigor and accuracy in the research process. In assessing the accessibility of identified data sources, the researcher went beyond mere availability and delved into considerations of permissions and subscriptions. This meticulous step was not only a compliance measure with copyright regulations but also a demonstration of ethical considerations in ensuring responsible and transparent research practices.

It reflected a commitment to sourcing data ethically and within the bounds of legal and intellectual property regulations.

The study employed diverse search terms, such as "governance and achievement of 21st-century health needs in Africa" and "sustainable financing and achievement of 21st-century health needs in Africa." The use of sophisticated search techniques like Boolean operators, wildcard systems, truncation, and ancestry searches ensured a meticulous refinement of research results. This approach not only broadened the scope of the search but also added a layer of depth, capturing nuanced facets of the relationship between governance, health financing, and health outcomes in Africa.

Selection criteria, guided by Patino and Ferreira's guidelines (2018), were established to locate reliable data sources. The criteria, comprising both inclusion and exclusion criteria, ensured a rigorous screening of articles from reputable databases to determine their relevance to the study. This methodical approach enhances the credibility of the selected sources, underpinning the study's commitment to scholarly rigor. For inclusion criteria, all selected articles were selected without considering or restricted to a specific publication year. This criterion ensured the use of old and current data, enabling the study to capture past and recent developments in the African Union's health initiatives and governance mechanisms. The dynamic nature of health policies and governance structures necessitated a focus on old and recent publications to provide the most relevant insights. Only peer-reviewed journal articles, books, and book chapters were included in the study. This inclusion criterion highlighted the perceived validity and reliability of information derived from scholarly sources. Peer-reviewed publications underwent a rigorous evaluation process, enhancing the credibility of the study's findings. Prioritizing peer-reviewed sources

enhances the credibility and reliability of the study's findings, as these sources undergo rigorous evaluation by experts in the field. The language of publication was restricted to English. This criterion was implemented to facilitate the researcher's comprehensive understanding of the content. English proficiency ensured that nuances in language and context were accurately interpreted, minimizing the risk of misinterpretation and misrepresentation of data. Also, restricting the language of publication to English facilitated the comprehensive understanding of content for accurate analysis.

Also, the articles were selected based on geographical relevance. Selected articles entailed studies conducted in or written with a focus on the chosen African nations. This criterion ensured the use of accurate and contextually relevant data. Focusing on specific African nations allowed for a nuanced examination of the AU's health initiatives within diverse national contexts, acknowledging variations in health challenges and governance structures. Also, inclusion criteria took into account the direct relevance to the research topic**.** Only articles directly related to the research topic, which explored the relationship between governance and the attainment of 21st-century health needs in Africa, were considered. This criterion ensured that all reviewed sources contributed directly to addressing the research questions, maintaining a clear focus on the study's objectives. Also, open-access content was considered in selecting relevant articles. Only articles with free access to the full content were included in the study. This inclusion criterion aligned with the commitment to accessibility and transparency. Open-access content ensured that the research findings were accessible to a broader audience, promoting the dissemination of knowledge beyond academic circles.

For exclusion criteria, articles that required a subscription to access the full content without permission from the authors were excluded. This exclusion criterion aligned with the commitment to open access and ensured that all relevant findings were accessible without financial barriers. Also, non-English publications were excluded. Articles published in languages other than English were excluded. While recognizing the importance of diverse language contributions, this exclusion criterion was implemented to maintain consistency in the researcher's understanding and interpretation of the content, reducing the risk of misinterpretation. Also, articles not directly related to the research topic, even if published in English, were excluded. This criterion ensured that the study remained focused on the specific intersection of governance and health needs in the African context.

Upon identifying relevant data sources, the researcher embarked on a meta-analysis and systematic analysis. This meticulous process involved extracting information, addressing the research questions, and summarizing the data in a structured table. This systematic approach aided in organizing information for clarity and set the stage for nuanced interpretations and insights drawn from the data. Throughout this process, the interview questions served as a point of reference, guiding the extraction of relevant information from the various databases and sources. This approach enhanced the alignment between the research questions and the extracted data, contributing to the coherence and relevance of the study's findings. Considering the format of the data (raw data, spreadsheets, and text files) during the planning of the data analysis process demonstrated a keen awareness of the varied ways information may be presented. This nuanced consideration informed the selection of appropriate analytical techniques, ensuring the most effective methods for extracting insights from diverse data formats.

Additionally, an examination of the structure of the data, including tables, time series, and narratives, was undertaken. This crucial step in the research process laid the groundwork for formulating coding frameworks and analytical techniques tailored to the nature of the information. The study recognized that the diversity in data structures necessitates a flexible and adaptable approach to analysis.

The volume of data available in the archival documents was a pivotal consideration influencing the time and resources required for data processing and analysis. This awareness informed decisions on the feasibility of a comprehensive exploration of the identified archival sources. The study was cognizant of the potential challenges associated with large volumes of data, underscoring the need for effective resource management throughout the research process.

Despite the comprehensive approach to sourcing and analyzing secondary data, it was acknowledged that field testing or pilot testing of the research instruments, specifically the approach to accessing and collecting archival documents, was not conducted. While the absence of field testing poses potential challenges, the study was committed to transparency and will adopt an adaptive approach, making iterative adjustments during data analysis to address unforeseen issues that may arise. This acknowledgment underscored the commitment to continuous improvement and the rigorous pursuit of research excellence.

3.4. Study Procedures and Ethical Assurances

The present study did not involve human subjects as participants. Instead, this study solely relied on the use of secondary data, and Unicaf University Research Ethics Committee (UREC) approval was obtained before data collection. Data sources were retrieved from reputable search engines, including Google Scholar, EBSCOHost, ProQuest, Sage Publications, and Emerald. To

identify relevant sources for inclusion in the study, various search terms, including "governance and achievement of 21st-century health needs in Africa," "sustainable financing and achievement of 21st-century health needs in Africa," "supply of essential medicines and achievement of 21st-century health needs in Africa," and "Africa CDC and achievement of 21st-century health needs in Africa." The researcher then used Boolean operators such as OR and Akasia, wildcard systems, and truncation to narrow down the research results. Furthermore, the researcher utilized an ancestry search to identify more sources to include in the study. This involved tracking any relevant footnote references and including them in the review.

Selection criteria were developed to help find reputable data sources. The criteria are essential components of article selection in research studies, ensuring that the chosen articles meet specific criteria for relevance and quality (Patino & Ferreira, 2018). The criteria entailed inclusion and exclusion criteria in which articles obtained from reputable databases were screened to identify if they were relevant or irrelevant to the study. To identify the most credible and relevant data sources for review, the researcher developed a set of inclusion and exclusion criteria.

Based on the inclusion criteria, the researcher ensured that all the articles that were reviewed were published in the past ten years to ensure that up-to-date data was used to inform the study. The data sources included peer-reviewed journal articles, books, and book chapters. These documents were believed to be valid since up-to-date sources were reviewed and included in the study. Also, the articles that were reviewed were published in English to ensure that the researcher wholly understood the content of the articles. Furthermore, the articles that were reviewed were studies for either of the 20 selected African nations. This was to ensure that accurate data were used to inform the study. Also, the researcher only reviewed articles that were related to the

research topic. Furthermore, only articles that had free access were reviewed. Any article that required a subscription was not included in the study. Only articles that were related to the variable under study were reviewed. This means that abstracts and summary letters sent to editors were not reviewed. All articles that were not related to the study variables were excluded from the study. The inclusion criterion was intended to ensure that all the sources that were reviewed were related to the variables under study, accessible, and credible. Upon the identification of the relevant data sources, the researcher performed a meta-analysis and systematic analysis to extract relevant data for addressing the research questions. Data were summarized in a table. After extracting sufficient data to address the five research questions, the researcher performed data analysis.

Secondary data analysis is an efficient and effective method of making use of existing data to address research questions. Secondary data analysis is more efficient in terms of time and money when dealing with data sets gathered at little or no cost (Dunn et al., 2015). The researcher should have a well-developed theoretical model and a list of variables to evaluate before beginning the secondary data analysis. This allows for the construction of viable data sets from pre-existing studies. Constructing usable datasets allows the investigator to analyze relevant data to address all research questions. Also, using secondary data involves a series of well-defined steps that ensure the research question is addressed with accuracy and integrity. By carefully planning, accessing, evaluating, cleaning, analyzing, and documenting the secondary data, researchers can contribute valuable insights to their field of study while maintaining transparency and allowing for the possibility of replication. In the study, a series of steps to ensure the data's quality, relevance, and ethical use were followed:

Ethical Assurances

Many researchers consider ethics a crucial aspect of qualitative research. Protecting participants' anonymity, rights, confidentiality, and privacy and ensuring the collection of data is relevant by maintaining that the methodological approaches employed in the research are suitable for addressing the research objectives without harming the respondents' researcher ethics has been used (McKenna & Gray, 2018). They are also valuable for ensuring transparency in the study. Proper communication and interpretation of research findings are allowed, and the quality of the study is promoted (Harper et al., 2017). In this study, ethical considerations were necessary because secondary data were used. The data collected were adequate and relevant in communicating the study's research questions, and this was the first ethical consideration in the study. To get authorization to databases by use of correct login details where access to data was denied, correct login details were required since the primary source of retrieving data was a reputable database. Correct usernames and passwords were required to log into the databases, and it guaranteed data diversity. A proper username and password enabled us to obtain all relevant articles to derive the critical points of the research topic. The researcher respected the privacy and confidentiality of individuals whose data is included in the secondary sources. The researcher ensured that any personal information of the authors was appropriately cited throughout the study. The researcher also adhered to data protection laws and guidelines to prevent any unauthorized access or disclosure of sensitive information. The researcher did not include addresses and any other identifying details of authors and adhered to data protection laws and institutional guidelines to safeguard against unauthorized access or disclosure.

Secondly, ethics ensured that previously conducted research was reliable and relevant to meet study goals and objectives, making personal blogs unreliable. The research focused more on articles published in the last ten years to ensure that the data used was up-to-date and relevant to the problem under study. Thirdly, according to Tripathy (2013), ethics acknowledged all other applicable information from other studies of other researchers to maintain the study's quality and originality of the study). Correct citation of the arguments was the primary concern in the study. The original authors of each study reviewed were cited appropriately. To acknowledge the work of other researchers, information obtained from all articles of the study was cited.

In qualitative research, researchers play a vital role. Researchers collect and analyze data, and sound judgment is required to employ data collection, sampling strategies, and sources. Sampling strategies are considered because it is only possible to perform a rational analysis with quality data (Etikan, Musa, & Alkassim, 2016). To perform data collection processes, reputable databases were required, search terms needed to be developed, and Boolean operators were used to generate researchable terms for the study.

Also, the researcher obtained Permission and Consent to use the data. Since some articles were not accessible, the researcher obtained permission from respective authors during the original data collection process. The researcher sought appropriate permissions from the data source or the individuals involved. This ensured that the data's use aligned with ethical standards and respected participants' autonomy.

Additionally, the researcher ensured proper attribution. The researcher gave proper credit to the original creators of the data by citing them throughout the paper to support the arguments. The accurate citation was used to acknowledge the work of others and avoid plagiarism. The

researcher clearly indicated the source of the secondary data in the study's findings, providing information that allows readers to locate the original data if needed.

Further, data quality and integrity were maintained during this study. The researcher thoroughly assessed the quality and integrity of the secondary data before using it. The researcher checked for errors, inconsistencies, and reliability issues. Any data cleaning or preprocessing was transparently documented, disclosing any alterations made to the original data to ensure validity.

Another ethical concern was respect for cultural sensitivity. For secondary data that involved cultural contexts, the researcher was sensitive to potential biases and misinterpretations. Misrepresenting or misinterpreting cultural aspects can lead to misunderstandings and ethical concerns. Thus, the researcher ensured an in-dept understanding of the cultural nuances present in the data and analyzed it with cultural awareness.

Moreover, the researcher ensured transparency in the analysis of the secondary data used.

When analyzing the secondary data, the researcher clearly outlined data analysis methods and described the coding schemes, categorization criteria, or any other methods used to extract insights. This transparency enables other researchers to understand how the researcher arrived at the conclusions and promotes scientific rigor.

The researcher also focused on avoiding plagiarism. Since the researcher used textual content from secondary sources, adhering to proper citation practices was taken into consideration. The researcher ensured to avoid directly copying text without quotation marks and proper attribution. This is because plagiarism could undermine the integrity of the work and misrepresent the contributions of others.

Besides, the researcher ensured ethical review and institutional guidelines since the researcher was affiliated with an institution and conducting research within an ethical framework, ensuring that the use of secondary data aligned with the established ethical guidelines was also considered.

Also, honesty in reporting was taken into consideration. The researcher ensured honesty in reporting the study's findings. In case of any limitations, unexpected results, or challenges while using secondary data, the researcher discussed them in the research. Honesty enhanced the credibility of this research and contributed to a more comprehensive understanding of the data.

The researcher also ensured Replicability and Transparency while documenting the findings. The researcher documented each step of the research process, including data selection, cleaning, analysis, and interpretation. This transparent documentation can enable other researchers to replicate this study and verify its findings. This may contribute to the overall reliability of scientific knowledge.

Finally, the researcher analyzed and drew a conclusion about the study that was performed. Throughout the study, qualitative researchers need to reflect, enabling researchers to focus on their perspectives, expansive views, and biases. In a qualitative research study, bias and subjectivity are inevitable. Readers can achieve coherence and clarity through bias and subjectivity (Sutton & Austin, 2015). Based on the findings of previously conducted studies regarding ethics after the research and before the research, the researcher reflected on the views of other researchers and ensured that the outcomes of the research were not pre-determined by the views and did not have any impact on the study of our topic, ethics.

Although this study met the research ethics, the Belmont Report protocol was inappropriate due to the lack of human subjects involved. Research involving human subjects and the emphasis

on protecting the subjects or participants requires adherence to research ethics and the Belmont Report protocol. The Belmont Report procedure provides three moral guidelines. According to Miracle (2016), the first rule is goodwill, which states that research volunteers must not suffer any damage. Given that there were no participants in this study, it was unnecessary to explore how to protect all participants from harm while maximizing the benefits of the research.

Additionally, since there were no participants in the study, there was no need to alert the IRB committee about the plan to carry it out to reduce the risks. Furthermore, it was unnecessary to describe the study's methodology and the precautions to be taken to protect the rights of participants. Moreover, it was optional to let the participants know the data's objective, intended audience, and distribution method. Moreover, due to the lack of human subjects in the study, there was no obligation for participants' informed permission.

The researcher outlined the strategy to conduct the study using secondary data to the Institutional Review Board (IRB) committee. Additionally, you should have told them how the study was carried out, why it was necessary to use secondary data, and how it was disseminated. Before starting data collection, the IRB at Unicaf University in Zambia was contacted. The procedure involves submitting the research proposal for review and making the required adjustments per the IRB's suggestions.

Justice, which entails evenly revealing the research risks and rewards and publicizing the research findings, is the second tenet of the Belmont Report process. Justice in research emphasizes the researcher's capacity to communicate the research findings, good or poor (Friesen, Kearns, Redman, & Caplan, 2017). However, since no human subjects were involved in the study and the Belmont Report methodology was not required, there was no need for justice. Respect for

others is the third rule. The idea is to provide participants the freedom to decide whether or not to participate in the study. The guideline also underlines that study participant are entitled to leave the study if they feel uncomfortable (Friesen et al., 2017). The premise wasn't necessary because I didn't use humans as study subjects.

The study's conclusions were not set for them. As a result, they neither supervised nor instructed the study participants because they were not involved in the study. Additionally, the researchers were aware of the possibility of bias in the data-gathering method and how bias could affect the findings of the study. By maintaining their professionalism throughout the process, they reduced the chance of bias. They considered the effects of ethical concerns on the research findings because the researcher's power can affect the data gathered. As a result, they correctly cited all the data from previous investigations. They recognized each author's contributions, which raised the credibility of the findings.

Data Collection and Analysis

During data collection, the researcher first identified reputable databases from which they could retrieve data sources. The identified databases included Google Scholar, EBSCOHost, ProQuest, Sage Publications, and Emerald. Afterward, the researcher developed the search terms and the inclusion and exclusion criteria to aid in retrieving relevant and credible data to address the research questions. Inclusion criteria ensured recent publication within the last ten years, peer-reviewed status, English language, relevance to selected African nations, alignment with the research topic, open access, and full content accessibility. A meta-analysis and systematic analysis extracted data for the research questions, and a table summarized these findings.

Key study variables like health financing, access to quality medicine, supply of essential medicine, Africa's governance, and 21st-century health needs were analyzed using a methodological triangulation approach. Triangulation involved crosschecking various data sources like journal articles, government reports, official websites, and books. Methodological triangulation was chosen for its ability to enhance validity, robustness, and comprehensive understanding of the studied phenomenon (.Bekhet & Zauszniewski, 2012). The inductive thematic method was used for data analysis, following Braun and Clarke's six-step process for qualitative data analysis, allowing for the identification and interpretation of patterns and themes within the data. At the outset of the qualitative data analysis process, researchers immerse themselves in the data, gaining a comprehensive understanding of its content. Thorough reading and re-reading of the data allow the researcher to identify initial patterns, significant portions, and essential observations. This step refrains from in-depth interpretations, emphasizing familiarity with the material. This initial stage aids in developing an in-depth familiarity with the research topic, as emphasized by Kaefer et al. (2015).

The second step involved the meticulous process of coding the data, where meaningful units of information are identified and labeled with codes that encapsulate their essence. These codes may be descriptive, conceptual, or emotional, capturing both surface-level and underlying meanings. Manual coding of data allows for the identification of relevant, interesting, or significant portions.

The subsequent step revolved around the organization of the initial codes into potential themes, which are patterns that emerge across the data, encompassing similar codes. The researcher grouped codes that share common concepts, ideas, or emotions to create preliminary

themes. This process facilitated the identification of overarching patterns and connections within the data, thereby contributing to a holistic understanding of the research topic.

With the themes identified, the fourth step involved a critical review of the themes in relation to the coded data segments. The aim was to ensure that each theme accurately captures the essence of the codes it represents. The researcher considered the relationships between themes, allowing for a comprehensive exploration of their contributions to the overall understanding of the data. This step promoted coherence and consistency in the analysis. Also, the researcher delved into the process of refining and defining the identified themes. Clear definitions and concise descriptions were developed for each theme, capturing their content and meaning. Meaningful names were assigned to the themes, reflecting their essence and relevance to the research question. The themes are refined to ensure coherence, distinctiveness, and faithful representation of the underlying data.

The final step involved compiling the results of the analysis into a coherent and structured report. The report started with an introduction outlining the research question, methodology, and analysis purpose. Each theme was presented individually, accompanied by detailed descriptions, supporting quotes, and interpretations. The implications of the themes were discussed in relation to the research question, existing literature, and real-world applications. The report concluded by summarizing the key findings, underscoring their significance, and suggesting avenues for further research.

The researcher focused on key study variables and the conceptual framework in the analysis. The researcher ensured that all the collected data related to the study variables, including health financing, access to safe, efficacious, and quality medicine, supply of essential medicine,

Africa's state governance, and attainment of 21st-century health needs among African nations. The construction of the study variables assisted the researcher in selecting the best approach for secondary data analysis.

Methodological triangulation was ideal for data analysis in this study. Triangulation is a technique used in qualitative research that involves verifying the validity and sufficiency of collected data by comparing and contrasting results from many data sources and collecting techniques (Singh et al., 2021). Thus, the researcher utilized triangulation in this research to crosscheck data sources, which included journal articles, peer-reviewed journal articles, government reports, official websites, and books and book chapters to ensure that they provide reliable and valid data on the above-mentioned study variables. Various scholars in the field of social science have supported the use of triangulation in data analysis. For instance, Nassaji (2020) argues that triangulation improves study results' validity, robustness, and generalizability. On a different note, Azungah (2018) claims that utilizing multiple data analysis methods enables one to comprehensively understand the phenomenon being studied. Rocha (2022) adds that using multiple data analysis methods in a study adds breadth, richness, rigor, depth, and complexity to the study. Due to these reasons, the researcher chose methodological triangulation as the most suitable data analysis method for this study.

Usually, triangulation in data analysis entails the use of multiple data analysis techniques. These data analysis techniques may be deductive or inductive (Natow, 2019). The inductive approach seeks conclusions based on pre-existing ideas in the evidence. Conversely, the deductive approach investigates hypotheses that are either supported or refuted by the facts (Natow, 2019). However, only the inductive technique was applied as secondary data were the major data used in

the research. The inductive approach to data analysis involves identifying and generating themes from a data set by reviewing existing data sources (Natow, 2019). Therefore, the researcher utilized an inductive thematic method to analyze secondary data and generate new themes that related to the research questions.

The researcher used Braun and Clarke's six-step process for qualitative data analysis. The steps included becoming acquainted with the data, creating initial codes, searching for themes, reviewing the themes, defining the themes, and creating a write-up. Braun and Clarke's six-step process was widely used as a framework to systematically analyze qualitative data, often in the form of textual data. This approach helped identify and interpret patterns, themes, and meanings within the data.

3.5. Summary

Overall, this chapter covers the research methods and the data collection procedures adopted in this study. The primary goal of this study was to explore the AU's contribution towards African nations' achievement of 21st-century health needs by focusing on state governance, healthcare financing, supply of essential medicines, access and adequate supply of safe, efficacious, and quality medicine, and establishment of Africa CDC. This study adopted a qualitative research approach. This research approach was preferred because of a number of reasons. Firstly, the qualitative approach allowed the researcher to gather data from multiple data sources, thus presenting detailed data to address the research questions (Ridder, 2017). Secondly, this research approach was ideal for this study since it is an interpretive, naturalistic, and emergent approach to studying human experiences and social sciences (Aspers & Corte, 2019). Furthermore, a qualitative approach was employed in this study because findings from a qualitative study are

based on illuminating and practical techniques that place a premium on qualitative entries to establish the efficacy of multimethod methods. A grounded theory approach was used in this study. The goal of a design in qualitative research is to produce new ideas about the issue at hand by analyzing and summarizing material found in pre-existing sources such as records, reports, and images (Lucas et al., 2018). Thus, using this research design allowed the researcher to summarize the existing studies about the contribution of AU towards the attainment of 21st-century health needs. The essence of qualitative research lies in its ability to delve into a subject matter through the lens of participants' views, perceptions, and experiences. Busetto et al. (2020) elucidate that research methods encompass various techniques and frameworks, and the selection should be guided by the nature of the research questions. In this context, the qualitative research method emerged as the ideal approach for the study of AU's contribution to African health needs. One of the primary reasons behind the selection of qualitative research is its exploratory and inductive nature. Leppink (2017) asserts that a qualitative approach is well-suited for studies that aim to explore a subject without preconceived theories. Since the study intends to comprehend AU's role without rigid hypotheses, the qualitative approach aligns seamlessly with the research objectives. The complexities inherent in healthcare systems, governance dynamics, and medicine supply in Africa require a research approach that can capture nuanced insights. The multifaceted nature of these factors demands an in-depth exploration that qualitative research is uniquely poised to offer. The intricate interplay between essential medicine supply and health outcomes in Africa necessitates a comprehensive understanding that qualitative research can provide. A significant advantage of qualitative research was its capability to capture contextual nuances that quantitative methods might overlook. This is particularly relevant when studying cultural, social, political, and

economic factors that influence health supply. The utilization of narratives, personal stories, and qualitative feedback allowed for the collection of rich and diverse data sources, uncovering hidden patterns and unexpected insights.

Qualitative research findings had direct implications for policy formulation, healthcare practice, and strategic decision-making. To capitalize on these advantages, the study employs a grounded theory approach within the qualitative framework. Grounded theory was known for its adaptability, theory-building potential, and focus on context. It enables the development of theories based on pre-existing information and uncovers intricate relationships within the data.

The focus of the study was on qualitative research, particularly in the context of using a grounded theory approach. The study's target population was African countries affected by health issues like malaria, tuberculosis, pneumonia, and HIV/AIDS. Due to practical constraints, a sample size of 20 countries was selected from different regions within the African Union (AU). Sampling was performed using a purposive multi-stage sampling approach. Ethical considerations were important throughout the research process, including obtaining permissions, ensuring data quality, respecting cultural sensitivity, and transparently documenting procedures. A total of 20 African nations were selected to be included in this study. Countries from Eastern Africa were Tanzania, and Kenya, while those from West Africa were Ghana, Burkina Faso, Côte d'Ivoire (Ivory Coast), Senegal, and Nigeria. Countries chosen from Northern Africa were Morocco, Sudan, and Egypt, while those from Southern Africa were Zimbabwe, Zambia, Mozambique, Swaziland, Namibia, Botswana, and South Africa. Equatorial Guinea, DRC, and Cameroon were chosen from the Central region.

Although the study did not include human participants, the researcher upheld several ethical considerations to ensure credible data was used for this study. Ethical considerations included safeguarding participants' rights, privacy, and confidentiality. The study also stresses the need for methodological transparency and data relevance. The researcher ensured authorization to access reputable databases, respected privacy, and adhered to data protection laws. The importance of proper attribution, data quality assessment, cultural sensitivity, transparency in analysis, and avoidance of plagiarism is highlighted. The researcher also aligned with institutional guidelines, promoted honesty in reporting, and documented the research process for replicability. Despite not involving human subjects, the text reflects on the Belmont Report protocol and its applicability. It discusses the principles of goodwill, justice, and respect for participants in the context of the study. The researcher's professionalism, mitigation of bias, and proper citation practices contributed to the study's credibility. Also, the researcher ensured that the data collected was adequate and relevant in communicating the study's research questions. Secondly, the researcher ensured that previously conducted research that was reviewed was reliable and relevant to meet study goals and objectives. Also, the researcher acknowledged all other applicable information from other studies of other researchers to maintain the study's quality and originality of the study. This was achieved by ensuring that the original authors of each study reviewed were cited appropriately.

The researcher played several roles in this study. First, it was the role of the researcher to collect and analyze secondary data. During data collection, the researcher retrieved relevant and credible data sources from reputable data sources and extracted data for addressing the research questions. After analyzing the data, it was also the role of the researcher to write a report on the research findings.

The study relied on secondary data from reputable sources like journals and databases. The selection criteria ensured data relevance and validity. Data analysis was conducted using thematic analysis, which is suitable for exploring textual data. The entire process adhered to ethical guidelines, emphasizing honesty, transparency, and proper attribution. Notably, this research did not involve human participants, so the Belmont Report's ethical principles related to participants did not apply. The focus was on respecting existing data sources, using them ethically, and contributing valuable insights to the field.

During data collection, the researcher first identified reputable databases from which they could retrieve data sources. The identified databases included Google Scholar, EBSCOHost, ProQuest, Sage Publications, and Emerald. After, the researcher developed the search terms and the inclusion and exclusion criteria to aid in retrieving relevant and credible data to address the research questions. After data was collected, it was analyzed using thematic data analysis. The researcher used Braun and Clarke's six-step process for qualitative data analysis. The steps included becoming acquainted with the data, creating initial codes, searching for themes, reviewing the themes, defining the themes, and creating a write-up.

Inclusion criteria ensured recent publication within the last ten years, peer-reviewed status, English language, relevance to selected African nations, alignment with the research topic, open access, and full content accessibility. A meta-analysis and systematic analysis extracted data for the research questions, and a table summarized these findings. The researcher emphasized the value of secondary data analysis, citing its efficiency, the need for a strong theoretical model, and well-defined steps involving planning, accessing, evaluating, cleaning, analyzing, and documenting data.

Key study variables like health financing, access to quality medicine, supply of essential medicine, Africa's governance, and 21st-century health needs were analyzed using a methodological triangulation approach. Triangulation involved crosschecking various data sources like journal articles, government reports, official websites, and books. Methodological triangulation was chosen for its ability to enhance validity, robustness, and comprehensive understanding of the studied phenomenon. The inductive thematic method was used for data analysis, following Braun and Clarke's six-step process for qualitative data analysis, allowing for the identification and interpretation of patterns and themes within the data. At the outset of the qualitative data analysis process, researchers immerse themselves in the data, gaining a comprehensive understanding of its content. Thorough reading and re-reading of the data allow the researcher to identify initial patterns, significant portions, and essential observations. This step refrains from in-depth interpretations, emphasizing familiarity with the material. This initial stage aids in developing an in-depth familiarity with the research topic, as emphasized by Kaefer et al. (2015).

The second step involved the meticulous process of coding the data, where meaningful units of information are identified and labeled with codes that encapsulate their essence. These codes may be descriptive, conceptual, or emotional, capturing both surface-level and underlying meanings. Manual coding of data allows for the identification of relevant, interesting, or significant portions. This phase is essential for organizing concepts and ideas, creating the foundation for subsequent analysis and interpretation. The subsequent step revolved around the organization of the initial codes into potential themes, which are patterns that emerge across the data, encompassing similar codes. The researcher grouped codes that share common concepts, ideas, or

emotions to create preliminary themes. This process facilitated the identification of overarching patterns and connections within the data, thereby contributing to a holistic understanding of the research topic.

With the themes identified, the fourth step involved a critical review of the themes in relation to the coded data segments. The aim was to ensure that each theme accurately captures the essence of the codes it represents. The researcher considered the relationships between themes, allowing for a comprehensive exploration of their contributions to the overall understanding of the data. This step promoted coherence and consistency in the analysis. Also, the researcher delved into the process of refining and defining the identified themes. Clear definitions and concise descriptions were developed for each theme, capturing their content and meaning. Meaningful names were assigned to the themes, reflecting their essence and relevance to the research question. The themes are refined to ensure coherence, distinctiveness, and faithful representation of the underlying data. The final step involved compiling the results of the analysis into a coherent and structured report. The report started with an introduction outlining the research question, methodology, and analysis purpose. Each theme was presented individually, accompanied by detailed descriptions, supporting quotes, and interpretations. The implications of the themes were discussed in relation to the research question, existing literature, and real-world applications. The report concluded by summarizing the key findings, underscoring their significance, and suggesting avenues for further research.

CHAPTER 4: FINDINGS

The purpose of this qualitative study was to explore the most significant health initiatives established by the African Union to fulfill its health mandate. This was followed by an in-depth evaluation of secondary data to determine the extent to which the organization has fulfilled Africa's current health needs. The study addressed the influence of African governance on the AU fulfillment of the continent's health needs. African nations' health systems suffer from various challenges, including political, financial, technical developments, institutional, and human resources (Oleribe et al., 2019). Due to these challenges, health systems across African nations are characterized by insufficient and inefficient working modules and decrepit and poor infrastructure. The consequences for human health are increasingly becoming worrisome (Chiedozie, 2016). For instance, due to poor health systems, communicable and parasitic diseases such as malaria, tuberculosis, and HIV/AIDS have significantly reduced life Expectancy (DeLaet & DeLaet, 2015). Also, the scale of the HIV/AIDS pandemic in Southern Africa, where HIV/AIDS prevalence is 18.1%, has resulted in a rise in the number of AIDS orphans throughout the region (DeLaet & DeLaet, 2015). This has made it difficult for governments and civil society in impacted nations to address the needs of such children. Furthermore, WHO (2021) reveals that Africa accounts for 60 percent of global cases of HIV/AIDS and 90 percent of the malaria cases globally, which are estimated to range between 300 and 500 million cases. Furthermore, as of 2017, roughly two-thirds of all maternal deaths across the globe are reported in Sub-Saharan Africa (SSA) (WHO, 2019). Furthermore, the coronavirus epidemic aggravates African countries' health difficulties, necessitating the development of appropriate treatments (Kuehn, 2021).

With the growing number of health issues, health promotion has developed throughout the years due to breakthroughs in human health research and societal changes (Edington et al., 2016). The researchers further elucidate that in 25 years to come, the world will experience advancement in human knowledge relating to health. The twenty-first century began with the first worldwide attempts to improve the health of all people around the world, the Declaration of Millennium Development Goals (MDGs) in 2000. These endeavors resulted in better health outcomes, particularly for mothers and children, as well as a decline in the most lethal communicable infections (Laaser & Brand, 2014). The weakness of the AU is that it has not met ordinary Africans' health needs. Besides, it has ensured that ordinary Africans do not participate in making decisions relating to their health; they have continued to rely overly on foreign aid and failed to hold African leaders accountable (Tieku, 2019). Although researchers have strived to examine the weaknesses and strengths of AU, its contribution towards the achievement of 21st-century health needs has not been studied.

The goal of this research was five-fold. First, the study aimed to examine the contribution of health financing toward the attainment of 21st-century health needs in Africa. Secondly, the study aimed to define how CDC contributes to achieving 21st-century health needs in Africa. Another goal of the study was to define how access to quality, safe, and efficacious medicine contributes towards 21st century health needs among African nations. The fourth goal of the study was to explore how the supply of essential medicines contributes to achieving 21st-century health needs in Africa. This study focused on these five elements: the formation of Africa CDC, access to and adequate supply of quality, safe, and efficacious medicine, healthcare financing, supply of essential medicine, and state governance. Challenges facing African countries' health systems

relate to the six building blocks of health systems: sustainable financing, health workforce, leadership and governance, service delivery, medicines and vaccines, and information (Azevedo, 2017). The governance and leadership component evaluates the legislative structure for the health sector and national management, national programs' components for managing the health sector, and the national institutional framework for multi-sectoral management. Sustainable finance comprises sub-national and national approaches to health sector management financing. Information includes emergency preparedness information systems, strategies for minimizing risks, and risk communication (Azevedo, 2017). EMS system and mass casualty management, response capacity, access to essential health programs and services, hospital administration during crises that cause mass casualties, and logistics and operational support tasks are all part of service delivery. The study uncovered how the governance of African leaders has impacted the AU's performance in the health-related field. Additionally, the findings of this study will be used to give suggestions that AU can utilize to enhance how it delivers its mandate to make sure that African nations attain the basic requisites for sustainable health systems. Lastly, this study will be the basis for future research relating to AU and its mandate in Africa.

A qualitative research method was adopted to gather data for this study. This research approach was considered suitable for this research project because it is naturalistic, emergent, interpretive, and an interpretive method applied to study social sciences and human experiences, as explained by Aspers and Corte (2019). Also, a qualitative research approach was applied in this study because it permits researchers to collect data from different sources (Ridder, 2017). Consequently, this allows the researcher to produce comprehensive research findings. Secondary qualitative data was used for this study. A descriptive research design allowed the investigator to

analyze and summarize materials from pre-existing sources. According to Lucas et al. (2018), descriptive research design allows the investigator to produce emerging ideas about an issue being studied by analyzing and summarizing data from existing sources.

The researcher selected 20 countries across Africa, focusing on regions heavily affected by HIV/AIDS, malaria, pneumonia, and tuberculosis. Data were gathered from reputable databases encompassing various sources like books, peer-reviewed journal articles, government websites, and book chapters. To identify the most appropriate sources to review, the researcher developed a set of inclusion and exclusion criteria. Based on the inclusion criteria, only articles published in the past ten years were reviewed to ensure only up-to-date sources were used to inform the study. Also, only articles published in English were reviewed to ensure a good understanding of the information contained in these sources. Furthermore, only articles that were freely accessible were reviewed. All data sources that did not meet the inclusion criterion were excluded. After data collection, data were analyzed using thematic data analysis. Braun and Clarke's six-step procedure for data analysis was followed during data analysis. The first step involved the researcher familiarizing themselves with the data, and the second involved creating data codes. The third step was to search for themes, followed by reviewing and then defining these themes. The last step involved writing the final report.

The study’s findings are presented in this chapter, which is organized into several sections. The first section presents the trustworthiness of the data. Credibility, dependability, transferability, and confirmability are discussed to showcase how the trustworthiness of data was secured. Also, this section outlines potential weaknesses in the validity of the data collection and analysis. The second section covers the reliability and validity of data to showcase the meaningfulness,

appropriateness, and usefulness of the study findings. The third section presents an overview of the study results. The five research questions guide the presentation of the study results. An evaluation of the study findings follows this section. The section on findings evaluation reports what the study findings mean. The research questions organize this section, and the last section provides a brief summary of the entire chapter.

4.1. Trustworthiness of Data

This section outlines how the researcher secured the trustworthiness of data in this study. Trustworthiness, also known as the rigor of a study, is defined as the level of confidence in data collected, interpretation, and procedures employed to enhance the quality of research (Connelly, 2016). On a different note, O'Kane et al. (2021) describe trustworthiness as the primary idea used to evaluate the quality of a qualitative interpretive study. According to Stahl and King (2020), it is imperative to build trust when using a qualitative research method. Thus, researchers must develop procedures and rules needed for a study to be regarded worthy by the reader. There are four generally accepted criteria for ensuring the trustworthiness of data in qualitative studies. They include confirmability, credibility, transferability, and dependability. However, another criterion known as authenticity has been added (Connelly, 2016; O'Kane et al., 2021). The five criteria were applied to ensure the trustworthiness of data in the current study.

Credibility, focusing on truth in qualitative research, was achieved through techniques like triangulation and reflective journaling. The latter method involved documenting events and the study process, which helped eliminate potential biases. Triangulation, using various data sources or methods, reinforced the credibility of the study.

Confirmability, which is defined as the degree of neutrality or the degree to which the study findings are consistent and can be repeated (Connelly, 2016), was ensured through a reflective journal that documented the entire research process. Transparently explaining the analysis steps further strengthened confirmability.

Transferability assessed how findings could be applied in different contexts. The study provided a detailed report of the research setting and carefully selected countries from various African regions, enhancing transferability.

Dependability, signifying that other researchers could replicate the study with consistent results, was supported by rigorous data collection and analysis procedures, as well as an audit trail detailing the research path.

Authenticity, the degree to which researchers accurately represent different realities, was demonstrated by gathering data from various sources for each country and comparing them, showcasing diverse perspectives.

Despite efforts to ensure trustworthiness, potential weaknesses included researcher bias, which is common in qualitative studies. Researcher bias is defined as any unintentional errors that occur within the research process or in the interpretation of the study results that are associated with a researcher's preconceived beliefs or expectations (Kyngäs et al., 2020). Like other qualitative studies, the data collection and analysis procedures for this study were prone to researcher bias because data were self-reported, where the researcher gathered information from multiple data sources and provided their understanding of the data. However, the researcher minimized this potential bias through triangulation. This was mitigated through techniques like triangulation, which helped validate findings.

4.2. Reliability and Validity of Data

The term "reliability" in qualitative research pertains to the consistency of methods across different researchers and studies (Rose & Johnson, 2020). For this study, reliability was crucial, especially in handling secondary data. The researcher chose an inductive approach for this study, allowing for greater flexibility and ensuring the reliability of the findings. Additionally, the researcher used the inter-rater method to enhance reliability, which involves assessing the level of agreement among examiners. This approach was employed to evaluate AU's contributions to 21st-century health needs in African countries.

Validity in qualitative research means that the findings accurately represent the phenomena under investigation. The researcher enhanced validity by providing a detailed description of data extraction and by using triangulation, specifically data triangulation (Osuagwu, 2020). Data saturation was also employed as a technique to enhance the internal validity of the study. Reflexivity, involving critical self-reflection, was used to further enhance internal validity. External validity was improved by explaining the research circumstances and assumptions. Additionally, a valid data analysis method, Braun and Clarke's six-step process, is used.

Also, in this study, the researcher used the inter-rater, also known as an inter-observer method, to achieve reliability. Oluwaseun et al. (2019) urged that the inter-rater method be utilized to enhance the reliability of secondary data sources. The inter-rater approach entails the degree to which examiners agree on the assumptions made during the study (Oluwaseun et al., 2019). This study used inter-rater reliability to determine the extent to which researchers agree on the different ways through which AU has contributed to the African countries' achievement of 21st-century health needs.

4.3. Results

This section presents the results of the study. The following research questions guided the presentation of the study findings.

1. How does health financing contribute to Africa's 21st Century Health Needs?
2. How does the African CDC contribute to the 21st Century health needs in Africa?
3. How does access to safe, efficacious, and quality medicine contribute towards 21st Century health needs in Africa?
4. How does the supply of essential medicine in the Continent contribute toward 21st Century health needs in Africa?
5. How Can Africa's state governance contribute to the 21st Century health needs in Africa?

Health financing contributes to the attainment of Africa's Health Needs

The first research question examined how health financing contributes to the attainment of Africa's 21st Century Health Needs. To develop major themes, the researcher grouped all the relatable, open codes. Further, the researcher collapsed codes and finally generated the final theme based on the synthesis of the parent codes. Based on the generated codes, three major themes emerged regarding the contribution of health financing toward African countries' attainment of 21st-century health needs. Each of these themes is discussed below.

AU Role in Healthcare Financing

The AU has long recognized the critical importance of healthcare financing in achieving sustainable development and improving health outcomes across the continent. Through initiatives such as the Africa Health Strategy 2016-2030, the AU has emphasized the need for African countries to prioritize health within their national agendas and increase investments in

healthcare systems (African Union, 2016). One of the key pillars of the AU's health agenda is the promotion of increased domestic financing for health. The AU recognizes that sustainable progress in health requires countries to allocate sufficient resources to healthcare within their national budgets. This includes funding for healthcare infrastructure development, procurement of essential medicines and medical supplies, and recruitment and retention of healthcare workers (African Union, n.d.).

The AU also advocates for the adoption of innovative health financing mechanisms to mobilize additional resources for healthcare. This includes exploring options such as social health insurance schemes, earmarked taxes or levies, and public-private partnerships (African Union, 2016). By diversifying funding sources and promoting financial risk pooling, countries can enhance the sustainability and resilience of their health systems (African Union, 2016). Also, the AU emphasizes the importance of ensuring that healthcare funding is allocated equitably and efficiently to address the health needs of all segments of the population (African Union, n.d.). This involves prioritizing investments in primary healthcare, maternal and child health services, and disease prevention programs. By targeting resources towards areas of greatest need, countries can achieve better health outcomes and reduce health disparities (African Union, n.d.).

Well-Designed Health Financing Policies

Findings revealed that health financing contributes to achieving 21st-century health needs through implementing well-designed health financing policies. Supporting this finding, Ezenwaka et al. (2022) revealed that multiple health financing policies stress the need to spend wisely on cost-effective and high-impact services that are crucial to attaining health-related Sustainable Development Goals (SDGs) and national goals. On the same note, Tandon and Reddy (2021) add

that a well-developed health financing policy that stresses that each individual, irrespective of their social status, should access the required healthcare services in sufficient quality is required to realize Universal Health Coverage (UHC). The Nigerian healthcare system is facing challenges mainly due to a lack of a well-developed health financing policy. Supporting this statement, Onwujekwe et al. (2019) reveal that Nigeria's health financing policies are inefficient. The authors further explained that there is a lack of data analysis and a focus on outcomes when allocating and using resources. Also, there are no policies that ensure the fair distribution of health resources. As a result, this has led to the poor performance of the healthcare system in Nigeria. Onwujekwe et al. (2019) recommend that if Nigeria needs to improve its health financing, it needs to ensure that its regulatory and legal frameworks are revised. Therefore, since poorly developed health financing policies in Nigeria have led to poor health outcomes in the country, it can be logically inferred that health financing contributes to the achievement of 21st-century health needs through well-developed health financing policies.

Also, this theme was supported by data garnered for Senegal. Barnes et al. (2016) revealed that one of the key strategies by the Senegalese government to achieve UHC is to advance the public health insurance system by implementing health financing policies.

Further showcasing how health financing contributes to African nations' achievement of 21st-century health needs, Atim et al. (2021) reveal that the Kenyan government envisions using the already established National Hospital Insurance Fund (NHIF) as a vehicle to facilitate the implementation of UHC. The NHIF was created in 1966 and is Kenya's primary health insurance provider, serving 89% of insured people (approximately 20% of the total population), most of whom are employed in the formal economy. Since its transformation into a state-owned business,

the NHIF has expanded its buying power to include both inpatient and outpatient medical care. Through NHIF, free obstetric care and insurance for the elderly are provided, bringing the system together more cohesively (Atim et al., 2021). Consequently, this has led the country to step towards achieving 21st-century health needs, supporting the idea that financing contributes to the African nation's achievement of 21st-century health needs through well-designed health financing policies. Data from Cameroon also supported this theme. The Global Financing Facility 2019 report reveals that solidifying the health system by enhancing the distribution and effective utilization of funds in the DRC has already decreased the costs of treatment for patients and improved the quality and uptake of services (Global Financing Facility, 2019). On a different note, Sieleunou et al. (2017) explain that the Ministry of Public Health of Cameroon is in charge of health policymaking. This ministry is also mandated to foresee the implementation of health policies in the nation. Sieleunou et al. (2017) reveal that the Ministry of Public Health of Cameroon has achieved so much in the past decade. Therefore, it can be logically inferred that well-designed financing health policies have helped African nations towards the achievement of health needs.

Renggli et al. (2019) further explain that Tanzania’s health financing system is highly dispersed, with several mechanisms in place to supplement the finances received from the central level. An example of these strategies is the improved Community Health Fund (iCHF), which offers health insurance to the informal rural sector on a voluntary basis (Renggli et al., 2019). Afriyie et al. (2021) further elucidate that NHIF and the improved Community Health Fund (iCHF) are Tanzania's two primary insurance programs. NHIF mostly covers employees serving in the public sector, while iCHF is a voluntary plan for Tanzanians working in the informal sector, as most Tanzanians work in the rural or informal economy (Afriyie et al., 2021). iCHF was founded

in 2001, and in 2018, an improved version called iCHF was introduced. Benefit packages were expanded to include regional health services as part of iCHF's rollout, and regional fund-pooling was made possible. Thus, from these findings, it is evident that there are already established health financing policies pushing Tanzania toward achieving 21st-century health needs.

Atim et al. (2021) further revealed that inadequate funding was a major barrier in Kenya that led to the failure of achievement of the UHC. Supporting their statement, the authors explained that low levels of health financing led to low levels of vital health inputs such as nurses and doctors. For instance, due to low health financing, Kenya has 1.6 doctors per 10,000 patients (Atim et al., 2021). According to Obadha (2019), financing healthcare is fundamental to attaining UHC since it influences its end goals through three intermediary goals: transparency and accountability, equity in resource distribution, and efficiency. From these findings, it can be logically inferred that if Kenya had well-designed health financing policies, it would have attained UHC. Similarly, Laokri et al. (2018) urge that health spending per capita in the Democratic Republic of the Congo (DRC) is much lower than in other low-income nations. The nation is now reworking its health financing policies to get closer to UHC targets (Laokri et al., 2018). This showcases the importance of well-designed health financing policies for the achievement of 21st-century health needs.

The theme was further supported by evidence from Morocco, which revealed that Morocco has implemented RAMED (*Régime d'Assistance Médicale*) to facilitate the financing of the healthcare system in the country. The RAMED is an affordable medical care program for low-income families. Akhnif et al. (2019) reveal that RAMED is one of the foundational policies that has helped Morocco make great strides toward universal health care (9 million people were covered by this scheme in 2015). The RAMED program's primary goal is to cover the costs of

medical care at public hospitals for low-income families. A 'means scores' based identifying system was created for use in the enrollment process. Funds from the government's Ministry of Health (MoH) largely subsidize the RAMED. Today, 28% of the Moroccans are under its protection (Akhnif et al., 2019). One of the original features of the RAMED policy is that since primary and secondary care medical services are currently free in public health clinics, the gratuity only applies to the formerly fee-based tertiary care medical services given at hospitals. Secondly, eligibility for the program's benefits is based on proxy means testing; therefore, it is limited to low-income people (Cottin, 2018).

The study by Kiendrébéogo et al. (2022) depicts that Universal Health Coverage improves the medical provider to the poor citizen, effectively fighting infections like Malaria and Ebola in a developing West African country. Also, Burkina Faso introduced performance-based financing, a program that enhances the user-free removal health services that financially assist lactating mothers, pregnant women, and children below five. Consequently, the law on the Universal Health Insurance Scheme provided an approach through which the government strives to make every citizen enroll in the insurance scheme majorly for the provision of reproductive and sexual health services in the control of the infections like HIV/AIDS and other STDs.

In Ivory Coast, financing policies have been made to enable financing of the health sectors by the private and government payments to enhance the adequate cash flow to cater to healthcare needs. The government also increased the funding for healthcare due to the increasing population and the need to adjust to sustainable health coverage, according to the study by Tandon & Reddy (2021). The study by Mutasa (2019) depicts that Zimbabwe developed Zimbabwe's National Health Strategy that took effect from 2021 to 2025 to advance its vision of financing healthcare to

reach 21st-century healthcare needs. The strategy could prioritize the healthcare system by improving the nation's economy and the citizen's overall life. Also, the Health for All Action Plan in Zimbabwe enhances the healthcare provision to all citizens, irrespective of social status. The president of Zimbabwe is given the power to appoint the Health Center Committee that could identify the priorities and the healthcare challenges within the communities, raise resources, and manage and organize the community funding for the healthcare provider.

The government of Mozambique has implemented a Universal Health Coverage policy to finance the healthcare system. Also, the National Health Policy in Mozambique has enabled community involvement, equity, and organizational collaboration to effectively enhance healthcare services' funding. Through Health System Development support, the government of Equatorial Guinea has managed to increase the financing of a fragile healthcare system hence increasing the percentage of the healthcare provision in the country, according to the study by Tandon & Reddy (2021).

Further evidence from Morocco showed that the country had developed various policies to facilitate medical coverage. Some of the developed systems include Compulsory Health Insurance (CHI) and Medical Assistance Scheme (MAS). MAS is founded on the premise of social protection, while CHI is based on the principle of solidarity and social security payments. The ultimate goal of these structures is to provide all people with the same unrestricted access to health (Zahidi et al., 2022). Another well-designed health financing policy that has assisted in the attainment of 21st-century health needs in Morocco is the "Moroccan Ministry of Health (MoH) Strategy 2025". This policy seeks to restructure and advance the country's healthcare system to expand people's opportunities to get medical treatment, streamline administrative processes, and

make better use of available resources. As Morocco's most comprehensive healthcare-IT plan, the digital shift is an ambitious method for attaining these objectives (El Otmani et al., 2021).

Efficient Money Transfer Systems in Healthcare Facilities

Additionally, findings revealed that health financing contributes to the attainment of African countries' 21st-century health needs by ensuring smooth and timely money transfers to providers for treating patients. In supporting this theme, Pande et al. (2015) elucidate that Egypt has launched several ways to improve health services delivery to the poor in the past few years. Among these methods is the creation of poverty maps to pinpoint the worst-off areas of the country, the collection of data on individual households through the use of proxy means tests to single out those in need, and, most recently, the development of a targeting mechanism that uses the merging of various databases to narrow down the search for Egypt's poor. All of these are essential for directing health care toward poor people (Pande et al., 2015). Also, the author explained that Egypt plans to expand its Family Smart Card (FSC) program to provide aid to low-income families. The government is providing cash transfers to supplement the FSC's present food handout program. If properly implemented, this approach might also be utilized to provide medical aid to the economically poor through cash transfers (Pande et al., 2015). Thus, it can be concluded that health financing contributes to the attainment of 21st-century health needs among African nations by ensuring efficient cash transfers in healthcare facilities.

Supporting the idea that financing contributes to the attainment of 21st-century health needs among African nations through efficient money transfer systems within the healthcare facilities, Atim et al. (2021) reveal that for better informal sector enrollment and more streamlined payments, the NHIF in Kenya has set up county-level offices. This assists in ensuring that patients using

NHIF can access quality care as NHIF provides sustainable, accessible, quality, and affordable health insurance to Kenyans. Also, digital platforms such as M-Tiba in Kenya make it feasible for individuals to save money on their phones and pay for healthcare services from a distance (Mwangi, 2019). Obadha et al. (2019) define M-Tiba as a mobile payment transfer system that was developed to allow patients to save money on their phones to use later to pay for medical services. Usually, the mobile phone-based system handles more than just financial transactions; it communicates over SMS messages rather than 3G or 4G networks. All of a patient's anonymous medical history is recorded after a visit to the doctor, from symptoms to medications prescribed. The collected information is then shown on a map, where disturbing patterns may be quickly identified (Obadha et al., 2019).

This theme was also supported by data from Cameroon. Findings revealed that Cameroonians use Mobile Money Transfers (MMTs) to pay their healthcare bills (Talom & Tengeh, 2019). According to the authors, MMTs in Cameroon are easily accessible, even in remote areas, and easy to use when making payments. Supporting data from Tanzania indicated that the World Bank and the government of Tanzania collaborated to design a novel conditional cash transfer program that depends on local communities to play a central administrative role in the identification of monitoring conditions, beneficiaries, and payments. A built-in impact assessment indicated that monetary aid had a beneficial effect on recipients' health and school performance (The World Bank, 2022).

This theme was also supported by evidence from Swaziland. One of the factors that have delayed Swaziland in achieving its 21st-century health needs is the lack of efficient money transfer systems in healthcare facilities. Research revealed that health and social welfare organizations in

Swaziland are highly inefficient. For instance, the Department of Social Welfare (DSW) reports that inadequate information and institutional systems lead to duplicate payments being made to some children while others receive no support; late payments; leakage; and few economies of scale in the administration of social assistance grants.

There are also efficient money transfer systems in the Zambian health system. Healthcare institutions allow patients to make payments using efficient money transfer systems such as mobile payment systems, Electronic Funds Transfer (EFTs), and Automated Teller Machines (ATMs). Also, in 1993 Zambia launched a Sector-Wide Approach (SWAp) in the health sector. The aim was to enhance efficiency in the utilization of externally sourced development aid and domestic funds.

Availability of Health Financing to Raise Revenue for Healthcare Institutions

Findings further revealed that health financing contributes to the achievement of 21st-century health needs through health financing, which aids in pooling funds, raising revenues for healthcare institutions, and purchasing healthcare services. This finding was supported by data from various countries. For instance, the literature reviewed revealed that the main reason why Nigeria's health system lags in terms of achievement of health needs is due to a lack of sufficient funds. Supporting this statement, Ezenwakae et al. (2022) urged that government expenditure on health in Nigeria remains low and accounts for only 0.5% of Nigeria's GDP and 16% of the overall health expenditure. In a study to examine the association between health financing and quality of life in Nigeria, Nathaniel and Khan (2020) found a significant relationship between the two variables. Thus, since lack of sufficient health financing leads to poor quality of life and lack of access to quality care, it can be concluded that health financing contributes to African nations'

achievement of 21st-century health needs by ensuring that sufficient health finances are made available to raise revenue for healthcare facilities.

The finding that health financing contributes to African nations' attainment of 21st-century health needs through facilitating health financing, which assists in raising revenues for healthcare institutions, pooling funds, and purchases of services, was supported by data from Egypt. Ahmad et al. (2022) explained that although Egypt is among the low-income nations, with a GDP of about $3100 as of 2019, the country has attained positive steps toward the improvement of its people's health status over the past years (Life expectancy has improved from 64.5 to 70.5 years). This improvement can be attributed to multiple healthcare financing agents and health financing sources. Research reveals that Egypt's healthcare system comprises many stakeholders, including several financing agents and financing sources (Ahmad et al., 2022). Also, a study examining the progressivity of Egypt's health financing established that the progressivity of healthcare financing in Egypt is a result of Out-of-Pocket (OOP) payment, direct and indirect taxes, social health insurance, and private health insurance (Ahmed et al., 2020; Fasseeh et al., 2022). This shows that Egypt has several sources of finance, which can be used to explain why there is an improvement in Egyptian health status in the country. Thus, provides sufficient evidence that health financing contributes to African nations' attainment of 21st-century health needs through facilitating health financing.

Supporting this theme, research reveals that Senegal's government has the chance to attain UHC by 2022, but only with sustainable funding (Results for Development, 2022). Senegal's journey to achieving UHC is supported by a national health financing policy that sustainably and equitably funds a UHC. R4D is collaborating with Abt Associates on USAID's Health Systems

Strengthening Plus (HSS+) initiative to facilitate the creation of NHFS. In order to help the NHFS steering committee and strategy-focused thematic groups develop a cogent finance strategy that will enable them to fulfill their goal, R&D is bringing our global leadership on UHC to the table. The government will be able to increase the coverage of primary healthcare across the Senegalese population and attain UHC with the help of a well-planned financial strategy (Results for Development, 2022). This provides sufficient evidence of how the availability of finances can facilitate the attainment of 21st-century health needs among African nations. In a different study examining factors that facilitate and hinder the sustainability of departmental health insurance units in Senegal, Ridde et al. (2022) revealed that actions performed to ensure financial stability and organizational risk-taking are considered to be favorable sustainability aspects. Sustainability is one of the 21st-century health needs in African nations. Thus, it can be inferred that by ensuring access to finances, financing systems have helped African nations to achieve 21st-century health needs. Supporting this theme, Eltahir and Abdallah (2021) urge that in order for the healthcare system of Sudan to deal with its challenge, it requires partnership with external funding institutions. This implies that the availability of funds contributes to the achievement of 21st-century health needs among African nations.

Data from Kenya also supported the idea that the availability of health financing to raise revenue for healthcare institutions contributes to African nations' attainment of 21st-century health needs. Mogeni et al. (2019) reveal that the Kenyan healthcare system has a budgetary allocation to health sectors, which indicates a commitment to prioritizing healthcare within the national agenda. These allocations enable investments in healthcare infrastructure, personnel, and programs aimed at addressing the diverse health challenges faced by the population. Mogeni et al. (2019)

discussed that the extent of funding allocated to specific healthcare initiatives, such as disease prevention, treatment, and healthcare infrastructure development, would directly impact the results reported in the context. For example, increased funding for HIV/AIDS treatment programs could lead to higher rates of antiretroviral therapy coverage and improved health outcomes among people living with HIV/AIDS. Further supporting this theme, Dutta (2015) explained that Tanzania is developing a comprehensive Health Financing Strategy (HFS). The acknowledgment of Tanzania's reliance on external funding for critical healthcare programs underscores the importance of diversified funding sources and risk pools. The availability of funding from both domestic and international sources would determine the scale and success of healthcare interventions in Tanzania. According to Kapologwe et al. (2019), Tanzania is hoping to improve the efficiency of its primary healthcare system by implementing Direct Health Facility Financing (DHFF). Eleven policy option papers on different health financing-related topics preceded the availability of the HFS draft. The current conversation recognizes the complex and disjointed character of the health finance system, which relies heavily on external funding for some critical programs and has different risk pools and funding sources.

Contribution of the CDC towards the achievement of health needs in Africa

This section presents the results of the second research question, which sought to examine the contribution of the CDC towards the achievement of health needs in Africa. Several themes emerged under this research question. Each of the themes is discussed below.

Facilitation of the Centers' Strategic Agenda of Quick and Effective Detection, Surveillance, and Response

Evidence from Morrocco showcases that the country has managed to fight chronic and other infectious diseases through the Centers for Disease Control. Fighting infections is achieved using the strategic agenda of quick and effective detection, surveillance, and response. The study by Ochu et al. (2021) depicts that CDC in Morocco has responded to the global war on COVID-19 using local strategies, which entail free application and testing, research, sensitization of the communities against the infections, and the building of the research centers to facilitate the research-based approaches (Ochu et al., 2021). The research-based approach remains effective for determining the appropriate surveillance and response to emerging infections like COVID-19.

Also, Swaziland has used CDC to easily and effectively fight the pandemics like Tuberculosis and HIV/AIDS. CDC has equipped the Ministry of Health in Swaziland with funds that have facilitated the research-based approaches to the control of infections through detection, response, and surveillance. As depicted by the research by Duong et al. (2019), CDC in Swaziland has encouraged citizens to undergo rapid testing and counseling through the strategic survey, which provides a cost-effective way of managing infections.

According to the study by Angula (2020), the Ministry of Health and Social Services in Namibia has used the CDC as a framework to realize its Vision 2030 goals on effectively managing infections. Realizing the vision involves research on the health information system that entails the integration of technology to facilitate effective disease surveillance (Angula, 2020). Integrating technology as a system developed by the CDC in Namibia involves incorporating all healthcare stakeholders in managing the health information system, which easily responds to emerging infections like COVID-19.

The data generated by Acheampong et al. (2021) provides comprehensive findings on the role of the CDC in Ghana in managing COVID-19 infections through molecular testing. Through the CDC, the Ministry of Health in Ghana has managed to control the infections through comprehensive testing and diagnosis (Acheampong et al., 2021). The testing and diagnosis are undertaken through the historical data generated from past research and the contemporary knowledge and equipment that aids in the accurate and quick detection of the diseases.

Through the support of the CDC, Burkina Faso has implemented the integrated surveillance system, which has combined all the surveillance programs that operate in the environmental sectors, human and animal. The combination of all the surveillance programs has enabled the country to use an integrated data management system to share information about zoonotic diseases affecting animals, humans, and other environmental life. As described by the study by Nana et al. (2022), CDC has recognized the health and cleanliness of the environment as a wider dimension of sustainable life.

The Africa Center for Disease Control in Côte d'Ivoire developed a Task Force as a strategy to fight COVID-19 in 2021, as per the study by Adebisi et al. (2021a). The strategy was developed due to the underreporting of COVID-19 and the weak healthcare system to curb the infections. To promote the fight against the infection, CDC in Côte d'Ivoire has created a framework for improving the health infrastructure and the supply of equipment for the surveillance and response to the novel Corona Virus. Also, it has funded the healthcare system, besides accelerating the use of effective data transmission systems for health information surveillance.

Due to the health crisis in Zimbabwe, the Ministry of Health has worked with the Center for Disease Control to develop effective and sustainable measures for managing infection in Sub-

Saharan countries. The management of infections has been achieved by using guidelines like the notifiable surveillance system and hygiene promotion enforcement strategies to manage the infections. Namulondo et al. (2021) assert that the management of COVID-19 infection has been accelerated by CDC in Zimbabwe. CDC developed systematic strategies that scaled up the citizens' testing, diagnosis, and vaccination.

CDC in Zambia has provided effective tools in response to chronic infections. It has also provided financial support as a strategy for developing the health infrastructure and the research institution, which aids in the management of diseases. Since independence, Zambia has depended on aid from the developed nation, making it challenging to manage the infections. The introduction of the CDC in 2016 provided an approach and effective strategies for managing infections through varied dimensions (Happi & Nkengasong, 2022). The country has also worked with the African Task Force for Coronavirus to manage infections like the COVID-19 pandemic. Amid the COVID-19 pandemic, Zambia has benefited from its collaboration with the African Task Force for Coronavirus, of which the CDC is a key member. Through joint efforts, the CDC and Zambian health authorities have implemented comprehensive strategies for COVID-19 prevention, testing, and treatment. For instance, Zambia’s CDC is working with other health authorities in the country, which led to the delivery of 228,000 more doses of COVAX vaccine to combat COVID-19 pandemic. The main goal of this was to ensure over 1.8 million of people were vaccinated in the country (CDC, n.d.).. As a result, Zambia has achieved a high rate of COVID-19 testing coverage, conducting over 1 million tests to date. Furthermore, the CDC's technical expertise has supported the development and rollout of Zambia's national vaccination campaign, resulting in the administration of over 5 million COVID-19 vaccine doses nationwide.

AU Report on Africa's CDC Contributions

The AU recognizes the prole of CDC in addressing the complex health challenges facing the continent and advancing its vision of a healthy and prosperous Africa. The AU report shows that CDC plays a crucial role in strengthening disease surveillance and response capacities across Africa (African Union, 2016). Through its partnerships with national health agencies, regional organizations, and international stakeholders, the CDC supports the establishment of robust surveillance systems for detecting and monitoring infectious diseases, outbreaks, and other public health threats (African Union, 2016). By providing technical assistance, training, and resources, the CDC helps countries enhance their ability to detect, respond to, and control disease outbreaks effectively.

Also, the AU report indicated that CDC supports for capacity building and training initiatives in Africa (African Union, n.d). Recognizing the importance of a skilled and knowledgeable workforce in addressing health challenges, the report indicated that CDC collaborates with African governments and institutions to provide training programs, workshops, and fellowships for healthcare professionals, epidemiologists, and public health workers (African Union, n.d). These capacity-building efforts strengthen local expertise and empower African countries to lead their own public health responses.

Strengthening the Capability and Capacity of Public Institutions of Health

According to the study by Breiman et al. (2007), the Centre for Disease Control, together with the world health organization, has managed to build public health institutions to manage influenza through medical research and innovation. Also, Breiman et al. (2017) examine the role of the CDC in Nigeria by building the capability and capacity of the National Veterinary Research

Laboratory in Plateau State to isolate the influenza viruses from the dying chicken (Breiman et al., 2017). As such, the Ministry of Health, agriculture, and information created the committee through the support of the CDC to form a strategic medical health institution to conduct effective research on the development and the spread of influenza diseases.

In Senegal, the Center for Disease Control and Prevention managed to develop a public emergency response following the anthrax outbreak in 2001. The CDC established the Public Health Preparedness and Response, which was a home for the emergency. The process of creating the Institute for Health was characterized by the development of four programs. The first program was the emergency management program and the emergency operation Centre. Also, the organization supported the local and state health departments to enhance comprehensive preparedness for the emergency (Redd & Frieden, 2017). The National stockpile of medicine in Senegal has also been enlarged by the CDC in Senegal to provide the medicine, vaccines, and medical equipment for the control of anthrax. Furthermore, the CDC has created regulatory programs to examine the work done in the control of Ebola, influenza, and any other disease in the West African Country.

Tanzania, as a Sub-Saharan African country, has been struggling with the healthcare service delivery at the healthcare institutions due to a lack of resources and skills in Public Health Institutions. The study by Wilson et al. (2021) depicts that the new field epistemology training program intermediate course development funded by the CDC and the government will create a mechanism for equipping public health hospitals with valuable skills in handling infections. The first Center for Disease Control and Prevention Field Epistemology Training Program Intermediate Course in Africa has strengthened the healthcare service delivery by training epidemiologists to

prevent, respond and detect the illness that may cause harm to the general public (Wilson et al., 2021). As such, the initiative gets achieved through strengthening the healthcare workforce in the outbreak instigations, surveillance system assessments, and prioritizing HIV control and evaluations.

Strengthen Partnerships to Spot and Retort Quickly and Efficiently to Threats and Outbreaks of Diseases

CDC in Africa has managed to strengthen the partnership between national organizations in order to quickly resort to the threats and the outbreak of Diseases in Africa. African national health institutes have used the data-driven interventions provided by the CDC to control the threats and the outbreak of diseases, as depicted by the study conducted by Shu-Acquaye (2017). The researcher depicted that the Nigerian government, in conjunction with the World Health Organization, has been made to act aggressively toward mitigating Ebola, COVID-19, and AIDS (Shu-Acquaye, 2017). Through the imposition of quarantine, the healthcare bodies have received support from the CDC in South Africa and Senegal to combat the coronavirus disease and Ebola.

Tanzania has strengthened the partnership to spot and resort with speed and efficiency to the threat and outbreak of the infections like Ebola. The research by Wang (2019) reveals that the government of Tanzania has partnered with the organizations like the African Union and the World Health Organization through the link provided by the Center for Disease Control to create a mechanism for efficiently and effectively tackling malaria, Ebola, and other respiratory infections. Through the one health strategy, CDC has enabled the Tanzanian government to monitor human populations that live in close proximity to animals hence resorting quickly to any emerging infections. Also, it has provided the government with resources, finances, and skills from foreign

specialists to constructively enable the healthcare organization to fight the outbreak of diseases (Wang, 2019). In corporation with international bodies like China, Tanzania has received mobile laboratories to enable the CDC to fight the Ebola outbreak effectively.

Under the leadership of King Mohammed VI, CDC signed a partnership with the private and public sectors to manage the infections arising in the country. According to Africa C.D.C. (2021), the pharmaceutical producers in Morocco have combined forces with the CDC to manufacture drugs and other pharmaceutical products that aid in the research and the response to the infections like COVID-19. Also, it has worked closely with World Health Organization and the US-based CDC.

The Ministry of Health and social services in Namibia has worked closely with CDC as a mechanism for improving healthy well-being. The collaboration has enhanced the close coordination of the national health authorities (GLANCE & STAFF, 2020). The international partners and community health service providers have continued to work with CDC in Namibia to create awareness, plus the training of the communities on the effective ways of counteracting the infections.

Also, the partnership between Swaziland and other African countries in managing infections and enhancing healthy life has facilitated the growth of the CDC and its objective of responding to the threats and the outbreak of infections (Duong et al., 2019). The cooperation deal between CDC and the research institutions has counteracted the spread of the infections like COVID-19 in Eswatini because of the combined effort.

According to Nana et al. (2022), the partnership has optimized the health of people, the ecosystem, and other animals within the ecosystem hence managing the threats and outbreaks of

diseases. Through the joint effort, CDC has accelerated its move to enhance a healthy life by conducting a collaborative effort that responds to the global risk of the human-ecosystem-animal interface. Through the zoonosis surveillance system, Burkina Faso has controlled the spread of anthrax through its ministries and departments.

In Côte d'Ivoire, CDC has partnered with the World Health Organization in African Region to enhance community engagement, surveillance, and prevention of the infections like COVID-19. According to Adebisi et al. (2021), CDC has also managed to partner with the global organization which has provided a framework for using the Integrated Disease Surveillance and Response Strategy that the combined force of African countries like Nigeria, Angola, Cameroon, Kenya, and the Democratic Republic of Congo has adopted.

The study by Baltazar and Rossetto (2020) depicts that CDC has strategically organized effective collaboration with other organizations like World Health Organizations and the United Nations Environmental Programs to facilitate the effective management of chronic infections, especially malaria. Also, COVID-19 has been managed to effectively manage the increasing infections by collaborating with overseas and developed nations. Through Climate change programs, CDC has promoted the fight for healthy lifestyles. CDC also trained detectives hence enhancing the easy collaboration for multiple disease surveillance and the pilot-sero surveillance

The study by Oloruntoba (2021) depicts that collaboration is realized through the application of research-based approaches in disease surveillance and the management of the information system related to health. CDC has also developed a laboratory network in Equatorial Guinea to promote knowledge and awareness in managing and responding to infections.

Sharing and Exchanging Lessons and Knowledge from Public Health Interventions with the other AU Member States

CDC has managed to create a platform through which the health organizations from AU member states have shared knowledge, skills, and ideas in combating contemporary health challenges. The knowledge is based on the community's resilience to infections, the management of the diseases, and the use of technology and information system to combat the challenges caused by emerging infections. African nations, especially Nigeria, have worked towards the elimination of poliomyelitis through vaccinations. The study by Mohammed et al. (2021) describes how the African continent has been considered a polio-free zone after increased public sensitization and vaccination, which is solely supported by the CDC.

Notably, the lesson and crisis management and health funding have been enhanced by CDC in Africa, according to the research by Medinilla et al. (2020). Through the joint continental strategies, the CDC has made the African nation like Senegal, Nigeria, Egypt, and South Africa collaborate with the WHO, boost tests capabilities and training, and undertake surveillance as well as the information for the management of emerging infections like COVID-19 (Medinilla et al., 2020). AU member states have also strategized the move towards sponsoring research and innovations in the institutions of higher learning to generate the skills which will be used in counteracting the emerging infection through the support of the CDC.

The research study by Bell (2016) depicts that the Ebola infections in DRC and West African countries have been a threat to the health and economy of the countries; hence there is a need to learn lessons from countries that mitigated the spread of Ebola infections like Kenya and Egypt. As such, CDC, together with the United States and international partners, mounted a

constructive response mechanism to end the Ebola infections. The mechanism was based on strengthening the preparedness to develop a mechanism for stopping the infections. The common factors leading to the fast spread of Ebola infections are poor public health and societal infrastructures, local unfamiliarity with Ebola, district of healthcare workers with the government, and the geographical spread of cases (Bell, 2016). Through the accelerators of the Ebola spread, the CDC recommended that the West African countries should strengthen public health readiness and prepare an effective system for detecting and stopping infections. Also, there was a need for the African Union members' states to develop the international surge capacity upon the occurrences of the overwhelming outbreaks.

Achievement of the Existing International Health Targets and SDGs, UHC, and International Health Regulations (IHR)

To achieve the existing international health target and sustainable development goals, the CDC in African countries has managed to create systematic approaches and plans by sensitizing the public on the disease prevention and response mechanism. The immediate measure is the implementation of Universal Coverage, which has been achieved by countries like Nigeria, Kenya, and South Africa. According to Mohammed et al. (2021), the elimination of poliomyelitis in Egypt and South Africa has been achieved through the sustainable development goals in healthcare, which is an existing international health initiative and is accelerated by CDC (Mohammed et al., 2021). CDC has also managed to regulate the production of medicine in African nations, especially in Kenya and Nigeria, where several medical research companies have been constructed, awaiting approval by the CDC.

The AU report on the achievement of existing international health targets, SDGs, UHC, and IHR reflects the continent's commitment to improving health outcomes and strengthening health systems. Through its Agenda 2063 and Africa Health Strategy 2016-2030, the AU provides a framework for advancing health priorities in alignment with global health agendas (African Union, 2016). The report highlights progress made towards meeting international health targets, including those outlined in the SDGs, such as reducing maternal and child mortality, combating infectious diseases, and achieving UHC (African Union, n.d). Additionally, the AU emphasizes the importance of implementing IHR to prevent, detect, and respond to public health emergencies and outbreaks (African Union, n.d.). By tracking progress, identifying challenges, and sharing best practices, the AU report underscores the continent's efforts to achieve universal access to quality healthcare, strengthen health systems, and ensure the health and well-being of all Africans in line with international commitments (African Union, 2016).

The research by Mamuye et al. (2022) on achieving international health targets in Africa has generated an examination of SDG, UHC, and IHR in Botswana. The Botswana government aims to integrate the health information system to improve the health system using the SDG, UHC, and IHR strategies. The healthcare information system is part of the sustainable development goals. CDC, in collaboration with other healthcare organizations, has sensitized the Ministry of Health to integrate the Health Information Exchange (Mamuye et al., 2022). Also, through the strategic plans of the CDC, telehealth information service provider has partnered with the African Union to support the policy of sustainable health care by integrating Universal Health Coverage.

Morocco and other AU member states have managed to use CDC to share and exchange the lessons and knowledge from public health interventions to manage chronic and pandemic

infections. The knowledge and lessons are based on the methods of generating finance from the Africa development bank and World Bank as an initiative to fund health research. The study by Therrell et al. (2020) depicts that Morocco has managed to manage the infections by sponsoring healthcare intervention programs and research using the knowledge generated from other African development partners. Also, Swaziland has intensified its healthcare interventions using the CDC by sharing knowledge on research and healthcare management to generate collective effort together with other development partners. The study by Glance (2020) depicts that CDC in Swaziland has built a resilient health system by using the lesson and knowledge learned from the African countries that have managed to counteract the infections like HIV/AIDS and measles.

Namibia has worked with the African member states to build a collective framework for fighting the disease by initiating the Center for Disease Control in the country. The effort to strengthen the public health system has been achieved by CDC in Namibia as a mechanism of promoting research, surveillance, and response to infections. Through CDC, Namibia has recognized that African countries' major dilemma is more consultation and knowledge sharing. According to Urama et al. (2020), mitigating the vice involves initiating disease management using the African Center for Disease Control and Prevention. Consequently, CCDC in Ghana has facilitated the sharing of strategic ideas and advice through technical consultation to improve the healthcare needs in Africa. Majorly, Ghana has managed to eliminate poliomyelitis in Africa through intensive research and the support of national health institutions. According to the study by Tajudeen et al. (2023), CDC in Ghana has managed to sensitize the African governments to the awareness of Monkey Pox through systematic research and surveillance.

Through coordinated public health response and political movement, Burkina Faso has led the African states to strategize effective measures and guidelines that will promote the financing of the CDC. As depicted by Diop et al. (2021), financing CDC has made it possible for African nations to receive the methods and guidelines aimed at eradicating the harmful social norms detrimental to the sustainable development goals of healthcare needs. Ivory Coast has continued to manage the healthcare challenges using CDC by exchanging lessons and knowledge with African nations to fight infections like Diabetes and Ebola. The fight against infections is realized by changing the framework of biological research from practical and technological-oriented formulae.

Zimbabwe has developed public health policies through the findings from the research from CDC. The policies aim to create awareness, surveillance, and effective response to infections and pandemics. Together with the African development partners, it has generated a knowledge-based approach to enhancing sustainability in managing malaria, HIV, and COVID-19. Also, the public health policies beyond the states have been framed by the CDC in Zimbabwe to limit the economic sanctions of the African member states as a way of promoting economic development, as realized through the research by Engel (2020). Moreover, Zambia has implemented Smart Care, a digital strategy for achieving the sustainable development goal in healthcare. CDC has developed Smart Care on behalf of the Zambian government, which has become a strategic agenda for promoting e-health in Africa, as depicted by Kaumba (2023).

The Africa CDC in Mozambique and Burkina Faso has facilitated the bi-directional exchange of technical information on healthcare in Africa. According to Kemp et al. (2023), most African countries have used the knowledge generated from the Framework to find a combined

effort to manage infections and pandemics. Long-term public health delegates have been recruited in African countries to manage the infection through knowledge-based sharing approaches.

Access to quality, safe, and efficacious medicine and their Contributions to the 21st Century Health Needs In Africa

This section presents the results of the third research question, which examined how access to quality, safe, and efficacious medicine contributes to the achievement of 21st-century health needs in Africa. Several themes emerged, and each theme is discussed below.

Supply of Medical Equipment

Access to safe, efficacious, and quality medicine contribute to the 21st-century healthcare needs in Africa through the effective supply of medical equipment, which has been enhanced by the use of the Africa Medical Facility as an initiative to bridge the medical gaps. The bridging of the gaps allows small businesses to access loans for leasing medical equipment from trusted suppliers. The supply of medical equipment entails business planning and financial management competencies to create a mechanism for buying the necessary products (Gbadeyan et al., 2017). The healthcare facilities and organizations have also collaborated with the manufacturers for an effective supply of medical equipment hence creating conditions through which the provision of quality healthcare services is promoted. The efficacious and quality medical condition contributes to the 21st-century healthcare needs in Africa.

Data from Kenya also supported the theme that access to safe, efficacious, and quality medicine contributes to 21st Century health needs in Africa through the supply of medical equipment. A survey of 22 secondary referral hospitals in Kenya revealed that 77%–91% of the facilities had the necessary tools to perform a cesarean section. Pulse oximeters and vacuum

extractors, two rather low-tech medical device kinds, were functioning in 3 and 15 out of the 22 hospitals surveyed, respectively, when it came to critical medical device types. 12 13 Similar findings were found in a survey of all Nairobi County facilities offering 24-hour, seven-day-a-week newborn care; of the 31 health facilities examined, essential equipment such as phototherapy machines, suction machines, and warming equipment—radiant heaters, resuscitative, complete cesarean section sets, and diathermy machines—were not present in any of the facilities (Ayah et al., 2020).

Also, government officials in Kenya have decided to waive value-added tax on medical equipment imports. As a result, the overall cost of supplying medical equipment has gone down (even though different other levies and taxes have proven to stir up costs for more advanced medical equipment in the supply chain) (Ministry of Foreign Affairs, 2021).

Supporting data from Cameroon revealed that transporting medical supplies throughout Cameroon is difficult (Streit-Juotsa, 2014). This is one of the reasons why Cameroon still suffers from widespread health inequalities and poor basic health outcomes. Some introductory facts can be used to document this problem. Half of Cameroon's population lives in rural areas, more than 4 kilometers from the nearest drivable street, and the country has an extreme poverty rate of 39.9%. Medical supplies and other necessities must be delivered to those in need, often in challenging environments (Streit-Juotsa, 2014).

The supply of medical equipment in Africa defines access to safe, quality, and efficacious medicine. In Morocco, through the Ministry of Health, the government meets 21st-century healthcare needs through the effective supply of medical equipment, which is advertised and procured appropriately by the ministry. Also, the government works in conjunction with

international organizations that provide the aid of medical equipment like protective clothing and surgical instruments, hence facilitating the effective management of infections. However, in its quest to meet 21st-century healthcare needs, the government of Morocco faces challenges like the chronic budget deficit, lack of accountability, and resource shortage, as depicted by Mourajid et al. (2023). Counteracting the challenges involves the effective allocation of funds to the Ministry of Health meant for the purchase of medical equipment and the provision of legal legislation to fight graft characterizing the procurement of the items. Also, the government of Swaziland meets the 2nd-century healthcare needs by supplying medical equipment to hospitals and healthcare institutions. Majorly, healthcare items are imported from overseas countries, with few of them getting imported from Namibia, South Africa, Egypt, and Morocco. Some equipment is donated by well-wishers and other non-profit organizations, enabling the government to counteract the equipment shortage. However, Swaziland is characterized by a shortage of medical equipment supply due to low budget allocations to the Department of Health. According to the study by Sukati et al. (2018), Swaziland meets 21st-century healthcare needs by integrating advanced digital technology into its equipment supply to ease transportation, reducing delivery duration. Reducing delivery duration enhances healthcare providers' effective attendance of emergency conditions, hence creating a lifesaving model to satisfy the 21st-century healthcare needs in Africa. According to Lucas (2022), Namibia intensifies its medical supplies by collaborating with its allies, especially China, to promote a sufficient supply of medical equipment. Majorly, the equipment is supplied from China to Namibia through the humanitarian aid program to limit the adverse effects of emerging diseases and enhance the friendly cooperation between the two nations.

Ghana has realized its medical equipment supply through effective procurement and enhanced value creation in medicine. Ghana has provided a framework for creating a systematic model to minimize mortality and morbidity by empowering public healthcare services through equipment supply in rural areas. According to the study by Demuyakor (2020), the digital agenda of Ghana incorporates the supply of modern medical equipment aligned with the current technology for the effective delivery of healthcare services. The digital agenda continues to be the fastest-growing health reform in Africa. Historically, Ghana was characterized by the ineffective delivery of healthcare equipment, leading to the inability of the service providers to limit the mortality and morbidity rates. Through conjunction with international bodies, Ghana has managed to procure proven medical equipment, hence minimizing the death rates caused by the diseases and pandemic.

Burkina Faso has managed to supply medical equipment to its rural and urban areas through the delocalization framework, hence creating a mechanism for an effective fight against infections. According to the study by Zon et al. (2019), the local governments in Burkina Faso have managed to deal with health detriments to reach 21st-century healthcare needs through an effective supply of medical equipment to rural areas. The equipment is procured from the national government and reaches every health center with coordination and management from the local and central governments. The decentralization in the government of Burkina Faso has made it possible to effectively train healthcare workers to adapt to contemporary items that are equipped with technology and innovative knowledge.

Ivory Coast is a nation with a high mortality and morbidity rate due to an insufficient medical equipment supply. The major diseases leading to death are cancer, malaria, and other

chronic infection, which has derailed the activities within the countries. Through the support of international organizations, the government has made it possible for healthcare providers to receive effective equipment to fight against infection to meet the 21st-century healthcare needs in Africa. According to Ashburn et al. (2020), HIV testing kits and drugs have been safely procured by the national government, hence creating a systematic approach to managing infections within the country. Also, the government has used the SWOT analysis to consider the challenges in the regular supply of equipment to provide sustainable healthcare and increase the supply to rural and local healthcare centers.

Zimbabwe has revolutionized the supply chain of medical equipment as a method of achieving 21st-century healthcare needs. According to the study by Roets et al. (2020), the shortage of medical equipment in Zimbabwe has been due to ineffective procurement and corruption within the ministries of health. Through Emmerson Mnangagwa's leadership, the government has managed to eradicate corruption within the health sectors, enabling effective procurement of medical items to the health centers. Also, the government has made it possible for the local and rural healthcare facilities to receive funding aiming at getting prepared for any infection that may invade the land.

Zambia uses the project procurement plan to manage the effective supply of medical equipment, according to the study by Mwiche (2019). Medical equipment supply has been challenging, leading to high death rates and low morale among healthcare workers. As such, the government of Zambia has implemented a strategic plan that enables it to import most of the medical equipment from overseas countries and its African counterparts. The post-COVID-19 era also managed to influence Zambia to embark on the production of medical equipment, hence

increasing their supply, like the case of medical oxygen, personal protective equipment, and ventilators. According to the study by Garrido (2020), Mozambique has implemented 21st-century healthcare needs by working closely with other organizations like the Red Cross and CDC to enhance the adequate supply of medical equipment. Several pieces of equipment have reached the rural areas through the support of the NGO, hence providing a path through which medical staff can effectively use them to fight infections.

The research by Oxford Analytica (2020) depicts that Obiang, the president of Equatorial Guinea, has made it possible to manage the availability of medical equipment by pleading for international assistance from Spain and France. Through the revenue generated from oil, the government of Equatorial Guinea has made it possible to provision a separate budget to purchase medical equipment to enhance the effective fight against the pandemic. The special funds have also been separated from the budget to purchase medical equipment to fight infections like Ebola and Malaria.

Sufficient Supply of Medicines

African medical supply has been hindered by a poor medical supply system, which has been a bureaucratic public sector supply system. The bureaucratic system has made drugs costly and unavailable to healthcare facilities due to corruption. Due to the increasing surge in infections in African countries, nations like Nigeria, Kenya, Senegal, South Africa, Sudan, and Egypt have come to realize the need to combat the bureaucratic medicine supplies that benefit individuals instead of helping public health institutions to fight the vice of diseases. The initiative is based on the promotion of a sufficient supply of medicine in developing nations. Also, avoiding the procurement and purchase of expensive medicine has made the Senegalese government construct

the pharmaceutical industry in the country to bridge the gap of the drug shortages in the hospitals (Ndao & Diarra, 2018). The local production of medicine by the Senegalese companies will create an environment where the service delivery to the patients will be improved due to the ease of access to medical equipment and resources. The study by Ndao & Diarra (2018) depicts that the Senegalese government has taken the initiative of promoting the local production of medicine to curb the expense of importing pharmaceuticals from France. The initiative is currently implemented by constructing the pharmaceutical companies, which is noted in Dakar, the capital city.

In Sudan, the Ministry of Health has intensified the pharmaceutical regulations to improve the quality of medical supplies from the import's perspective. As such, increasing the supply of medical equipment get achieved by Sudan through privatization and price liberalization hence creating positive procurement and the supply of medicines that are helpful in the government deficit. The pharmacy and poisons act established the federal and poison board in Sudan to promote the importation and regulation of medicine quality for the mitigation of the medical challenges that had been exhibited in the Sudanese market in the 20th century. The radical changes in pharmacy regulation by the Pharmacy and Poison Act created a framework through which the healthcare organization can receive drugs at affordable prices to solve the healthcare needs of the 21st century. The study by Ali & Omer (2008) highlights the initiatives taken by the Sudanese government to license pharmacy premises for the effective and efficient supply of medical equipment. Licenses have been granted to wholesalers, retailers, and private commercial pharmacies that have complied with the regulations outlined by the Pharmacy and Poisons Board Act (Ali & Omer, 2018). Notably, the regulation of the supply of medicine to the public created a dimension of enhancing

citizens' right to access quality standard healthcare. Consequently, the Federal Pharmacy and Poison Boards and the Federal General Director of Pharmacy have continued to regulate the safety, efficacy, quality, and price of medicine through the control of importation, manufacturing, and exportation of medicines and cosmetics to the citizens. FGDOP has maintained the national drug analysis laboratories in South Sudan to analyze the drugs in post and pre-market conditions. It has coordinated with the state's department of pharmacies to comply with the standard specifications, regulations, and guidelines that define the importation, manufacturing, sales, and distribution of drugs in Sudan.

Supporting data from Tanzania revealed that the median percentage of surveyed drugs was quite low and that a month's treatment with metformin 500 mg (twice a day for 30 days) costs more than five days' IB and 2.5 days' LPG salaries (Babar et al., 2019). The low supply of medicine can be attributed to poor health outcomes in Tanzania. Thus, based on this, it can be logically inferred that access to safe, efficacious, and quality medicine contributes towards 21st-century health needs in Africa through a sufficient supply of medicines. WHO (2018) reports that Tanzania is striving to improve access to quality essential medicine and health products in order to improve patient outcomes.

Furthermore, supporting data from Botswana revealed that Consistent with the investment in the healthcare system visible in other clinical sectors, Botswana has one of the highest alignments of NEML to the WHO EML in the sub-Saharan African region. A more accurate estimation of the quantity of chemotherapy needed, based on information from the National Cancer Registry and resource-sensitive treatment guidelines, can lead to fewer shortages and smoother, more efficient procurement procedures (Martei et al., 2018).

Supporting the fact that the supply of medicine has been a central strategy for enhancing the achievement of 21st-century healthcare needs in Africa, supporting evidence from Morrocco shows that in Morocco, the government has reduced the taxation on the importation of medicine to increase their supply to hospitals. Reducing taxation has made it possible for most private and public hospitals to afford the drugs, leading to an effective fight against the pandemic. According to the study by Darouich & Dhiba (2020), Morocco has enhanced the supply of medicine by constructing the medical industries to improve production and limit the global competition over the importation from key medical suppliers. Pharmaceutical industries in Morocco have embarked on medical research aiming at becoming the number one producers of medicine in Africa for effective supply to hospitals across the country and the entire continent.

Findings also showed that the Kingdom of Swaziland has improved medicine supply to hospitals, especially the ARVs, to meet 21st-century healthcare needs. Increasing the supply of medicine has led to a reduction in the number of cases of HIV infections, leading to efficient management of health services in the country. In the past, most of the medicines were unaffordable to the people of Swaziland, leading to increased infections and deaths across the country. The government of Swaziland has made it possible for the increased importation of Medicine from neighboring countries like South Africa and Angola to promote the availability of essential services in hospitals. The study by Rennie et al. (2020) depicts that Namibia has developed grass-root methods of monitoring the medicine shortage in the country to determine the mechanism of effective supply to the nation. Namibia relies heavily on importing medicine from neighboring and overseas nations, making it a burden to procure enough medicine to fight infections. Limiting the

burden involves the removal of the trade tariffs on the medical supply to the country and creating friendships with the medical producers globally.

Zimbabwe has implemented good governance for the medical program to promote hospital medicine supply (Maponga et al., 2022). Good governance is associated with improving public trust in the medical supply to attain 21st-century healthcare needs. Zimbabwe has managed to eradicate the economic sanctions implemented by the United States during the Reign of President Robert Mugabe, which historically deterred medical importation in the country. The move has enabled the Ministry of Health to receive government medical aid, increasing hospital medicine supply. The government of Mozambique has made it possible for the Ministry of Health to achieve 21st-century healthcare needs by implementing affordable healthcare that enables the health centers to receive medical supply subsidies from the government (Blankley, 2021). Majorly, well-funded healthcare institutions enable them to purchase medicine from the private and public sectors to promote the availability of essential medicine. Equatorial Guinea has enhanced the medicine supply by collaborating with partners like the United States of America, Spain, and France. The collaboration has made it possible for the country to fight the infections by receiving the medicine that can easily fight them before the actual resistance.

Promotes Access to New and Quality Medical Instruments

Access to safe, quality, and efficacious medicine plays a significant role in the promotion of access to a new quality medical instrument in the 21st century in African countries like Nigeria, Senegal, South Africa, Egypt, and Sudan. Egyptians have implemented the use of e-health as an instrument that manages healthcare organizations. E-health gets achieved by the use of the electronic health record, which is a top layer of the next-generation information infrastructure for

the enhancement of data securities concerning healthcare. Majorly, the e-health infrastructure has promoted the supply of medical instruments through electronic orders, which does not require the physical presence of the receiver. Electronic Health Record is in their first phase of adoption in Egypt to create a relationship between medical service providers and patients for the provision of patient-centered healthcare services. Medical providers also use e-heath to accelerate access to medical instruments from suppliers in emergency situations. The integration of the health insurance system has been a challenge in Egypt, hence making the government adopt the new infrastructure characterized by technological innovation to curb health impediments (Badran, 2019). The application of e-health in Egypt will create a paradigm shift in cost-effectiveness and enhancement of healthcare quality, according to the research generated by Badran (2019).

The Senegalese government has also strived to improve the quality of healthcare through the creation of access to new and quality medical instruments. The report by the world health organization (2015) depicts that drone technology has been implemented by the Senegalese government to conduct medical surveillance, hence enabling medical researchers and healthcare providers to innovate effective and efficient measures in producing the required medical instruments for mitigation of the healthcare challenges in Senegal (World Health Organization, 2015).

Botswana has also managed to generate a framework for accessing new and quality medical instruments to promote primary access to healthcare. Access to new medical instruments is based on building drug processing plants and increasing the number of suppliers to reduce the monopoly in drug supplies (Umviligihozo et al., 2020) and the quality provision of Personal Protective Equipment (PPEs) and drugs to mitigate the increasing infection of COVID-19.

Supply of essential medicine in the Continent of Africa

The different themes that emerged included the availability of essential medicines for managing malaria, pneumonia, tuberculosis, measles, and diarrhea in Africa, the availability of essential medicines within healthcare systems in the proper dosage forms, and the availability of essential medicines within healthcare systems in assured quality and sufficient information. Each of these themes is discussed below.

Availability of Essential Medicines for Managing Malaria, Pneumonia, Tuberculosis, Measles, and Diarrhea in Africa

Findings revealed that the supply of essential medicine across the globe contributes to 21st-century health needs in Africa by ensuring that essential medicines for managing tuberculosis, malaria, pneumonia, measles, and diarrhea are accessible to citizens in these nations. When these medicines are readily accessible to citizens, this improves their well-being and minimizes mortality and morbidity caused by these illnesses. Cillóniz et al. (2020) reveal that pneumonia still remains a 21st-century health issue today. Wood et al. (2020) also identify pneumonia as a major cause of child mortality in Nigeria. According to Wood et al. (2020), interventions to fight against pneumonia are available globally but not effectively deployed in Nigeria. This is the reason why there is a lower decline in under-five pneumonia death rates (8%) in Nigeria compared to the global decline (50%). Comparing these percentages, it is evident that the availability of essential medicines for managing pneumonia contributes to the achievement of 21st-century health needs, and one of these needs is reducing under-five pneumonia death rates.

This theme was also supported by data from South Africa, which indicated that South Africa had developed Standard Treatment Guidelines and Essential Medicine List (STGs-EML)

to make sure that cost-effective, safe, and effective essential medicines are available and promote rational utilization of medicines (Perumal-Pillay & Suleman, 2021). Also, research revealed that Sub-Saharan Africa is still the most burdened nation by infectious diseases globally, with four communicable illnesses, including malaria, HIV/AIDS, diarrhea, and lower respiratory infections being the most significant causes of premature deaths (Meyer et al., 2017).

The study by Mandoko et al. (2018) depicts that the national government has made Artemisinin-based combination therapy available to private health centers and pharmacies through the Ministry of Health.

Making the essential medicine available in Botswana to treat the high prevalence of pneumonia has made the Ministry of Health fight the increasing rate of pneumonia infections. According to the study by Anand Paramadhas et al. (2019), the high rates of provision of antimicrobials and utilization reflect the increasing spread of pneumonia infections in the country. Therefore, the Ministry of Health tries to extend prophylaxis to prevent infections at the surgical site and provide a mechanism for reducing emerging infections by supplying essential medicines at lower prices to private and public hospitals. The most common essential drugs for the treatment of pneumonia are cefotaxime, ceftriaxone, and metronidazole. Consequently, the high empirical use of antimicrobial drugs has prevented other sexually transmitted infections (Anand Paramadhas et al., 2019). The High usage of IV antibiotics and the construction of the variable infrastructure in the hospitals for the appropriate storage of the fragile drug have led to the extension of the fight against pneumonia infections in Botswana. However, there exist challenges to the resistance to the drug which the government has implemented the initiatives of working with the World Health

Organizational and the Center for Disease Control to increase the research on the essential drugs that have been outdated due to increased resistance.

The cost-effective medicine supply has made the Ministry of Health in Cameroon fight cardiovascular infections. As a low-income country, Cameroon has managed to actively fight premature deaths due to the tuberculosis infections that had characterized the western region. According to the study by Dzudie et al. (2020), essential medicine has been made available and cost-effective to the healthcare facilities in Cameroon by the Ministry of Health in conjunction with organizations like the Centers for Disease Control and the World Health Organization. The research depicts that the Health Action International Methodology and the World Health Organization identified the existence of high median-price medicines and medical equipment in community pharmacies and public facility outlets (Dzudie et al., 2020). Common medicines for fighting cardiovascular infections like tuberculosis include furosemide, digoxin, hydrochlorothiazide, and dyslipidemia. The costs have been made affordable to the public in the government hospitals hence creating a condition of fighting the infections towards reaching the 21st-century sustainable development health goals. Therefore, Cameroon's government has worked with healthcare organizations and medical suppliers to improve the availability and affordability of medicines at public health facilities to curb cardiovascular infections.

Supporting evidence from Morocco shows that Morocco has managed to control the spread of the infections like Tuberculosis, Measles, and Pneumonia by making essential medicine available through the importation and manufacturing of drugs. According to the study by Bouaddi et al. (2021), the emergence of COVID-19 increased the detection rate of Tuberculosis in the

country**,** making the rise in government awareness due to the similarity of symptoms in TB and COVID-19.

In Namibia, the government has reduced medicine prices to manage measles and Tuberculosis. Namibia has a high prevalence of TB hence classified as the leading cause of death in the country. According to Nakambale et al. (2022), the government of Namibia has increased the vaccination rate against measles and TB in the country hence managing the infection. The vaccines are 93% to 97% effective in managing the infections. However, immunization coverage against measles has yet to reach the targeted mark according to the World Health Organization guidelines in some districts in Namibia. As a result, through the Ministry of Health, the government has sensitized the communities to take free immunization and vaccination against measles and TB.

The burden of childhood pneumonia, diarrhea, and malaria has been historically evident in Mozambique, making the Ministry of Health develop a strategic approach by supplying essential drugs and medicine to enhance the healthy life of the citizen. Batura et al. (2022) depict that Mozambique has greatly reduced child death due to its ability to manage malaria, measles, and pneumonia by making its medicine available at low cost. The data generated by Batura et al. (2022) continues to depict that the cost of managing malaria, pneumonia, and measles in Mozambique ranges from $2.5 to $4.2 for outpatient and $3.8 for inpatient admission, which is affordable for managing infections. Ghana continues to fight malaria, TB, and measles infections through universal health coverage, which has financed the country's importation and manufacture of essential medicine. As evidenced by Asumah et al. (2023) study, the Pneumococcal vaccine was widely used in Northern Ghana as an essential medicine for pneumonia infections. MMMRV drugs and vaccines have also been used in Ghana because they are available to manage the measles

outbreak. Easy management of measles has continued to be implemented through the use of the EPI model, where various antigens have been taken for the study, and a drug that induces the antigen-antibody reaction is injected to prevent the multiplication of the organism causing the infection.

Additionally, supporting evidence from Equatorial Guinea shows that the country has managed the infection of malaria through the use of quinine and chloroquine hence making it possible to reach the 21st-century healthcare need by reducing the death rate caused by malaria. Small and medium enterprise dealing with essential medicine has been promoted by the government of Ivory Coast, according to Kim (2022) hence enabling the effective supply and availability of essential medication for the management of infections.

Availability of Essential Medicines within Healthcare Systems in the proper dosage forms

Findings also revealed that the supply of essential medicine in the Continent had made an amicable contribution to Africa in the 21st century by making the essential medicine available within the healthcare system in the proper dosage form. Essential medicine is the medicines that make satisfaction the priority healthcare needs. These medicines get selected with regard to the prevalence of the disease: cooperative cost-effectiveness and evidence of safety and efficacy. The intention of essential medicine in Africa is based on making them available in the functioning health care system every moment, in proper dosage and adequate quantity. Also, they must be available within an individual's condition of quality assurance and affordable price. Notably, the implementation of essential medicine in Africa should adhere to the condition of flexibility, adaptability to many health situations, and essentiality to national responsibility.

Proper dosage of essential medicine has become an idea in contemporary medication in the health sector. It aims to control morbidity and mortality in African countries, especially in Tanzania. According to Sasi et al. (2019), the prescription of ceftriaxone as an antibiotic has reduced bacterial infections due to medical personnel continued use of the recommendations and the dosage guidelines. Notability, the discovery of ceftriaxone has led to the dramatic fall of bacterial infection in Tanzania even though the bacteria resistance has increased, threatening the effectiveness of the drugs and the modes of prescriptions. If improper doses are granted to the patient, the bacteria increase the resistance leading to high mortality and morbidity in the healthcare service delivery sectors. Therefore, the appropriate prescription of ceftriaxone to fight the bacterial infection has made Tanzania deal with the gonococcal infections which had become rampant in the previous years (Sasi et al., 2019). Ceftriaxone has also been made cheaper by chemists and pharmacies, helping the government and the national health sectors fight bacterial infections and leading to sustainable development goals in the country's healthcare. Also, the chirality status of the registered medicines has been made essentially cheap to the healthcare centers and the patients hence providing a framework for reaching sustainable development goals in a healthcare setting. According to the study by Mwamwitwa et al. (2020), medicines with a stereogenic center get presented as racemates mixed with equal amounts of enantiomers. Notably, it is chiral to use single enantiomer medicine to prevent the possibility of bacteria resistance to medication (Mwamwitwa et al., 2020). As such, the Ministry of Health in Tanzania strives to protect the public by empowering the regulatory bodies to control chiral medicines through enantiomeric impurity analysis.

African countries have made essential medicine available in their countries hence increasing the chances of survival of citizens. The essential medicine in proper dosage is proven by the medical personnel, creating a formalized drug administration model as proven by the bureaus of standards. The essential medicine in Morocco amounts to 270 in number. These medicines are prescribed at the healthcare centers in the proper dosage for free, making the country easily fight infections. Also, these medicines are supplied through the public sector to the healthcare centers leading to the development of treatment protocols that enhance their delivery in proper dosage. Morocco has provided effective podiatric care to patients due to the availability of essential medicine in proper dosage (Yafout et al., 2022). These podiatric medicines are available in liquid and solid forms, where some are taken orally, and others are injected into the blood. Before the injections and prescription, the doctors must ensure that the drugs are available in the proper dosage.

The government in the Kingdom of Swaziland is the country's sole procurer and supplier of essential medicine. Because of the one supplier, the government manages the availability of the medicine in the health system hence promoting the effective control of infection through the prescription in the proper dosage forms by the medical health personnel. To eliminate neglected tropical diseases, the government of Swaziland has managed to sensitize the general public on the need to take prescribed medication from qualified health personnel. The campaign on using essential medicine has made the government increase the procurement of drugs, enabling it to fight infections actively. As depicted by the research conducted by World Health Organization (2019), Swaziland has achieved a major milestone in managing TB, measles, and HIV/AIDs. The

management of diseases is based on prescribing essential medication in the proper dosage to reduce their resistance to infections.

Burkina Faso erected a pharmaceutical company that manufactures essential drugs to fight against tropical infections like malaria. The manufacture of essential medicine has increased the availability in Burkina Faso, which can be provided to patients in the proper dosage to manage infections. Increasing infection management is also achieved by directing travelers to take the prescribed medication to manage malarial infections. The study by Suarez-Sanchez et al. (2019) asserts that malaria, the leading cause of death in Equatorial Guinea, has been curtailed through the supply of essential medication imported, manufactured, and provided through medical aids. Public hospitals' increasing access to essential medication has allowed doctors to manage the infection by administering drugs properly.

Essential medicine plays a crucial role in the management of infections in Namibia. The Namibian government has enhanced essential medicine supply to healthcare centers through effective pharmaceutical chains to reduce the burden of infectious diseases. To promote the effectiveness of medical delivery to the citizens, the government has employed qualified medical personnel who interpret the drugs and provide the proper dosage to the patients. According to the study, Namibia's government developed a strategic framework for managing the local manufacturing of drugs to enhance the availability of essential medicine in proper dosage in the healthcare systems.

In Mozambique, essential medicines are procured from the open tender, where the lowest bidder becomes the supplier to the healthcare centers and the government. Andrew et al. (2021) depict that the primary care programs in Mozambique have been facilitated by the availability of

essential medicine in proper dosage hence reducing the morbidity and mortality caused by tropical diseases. Children and women have continued to receive effective care in both the private and public hospitals in Mozambique due to the increasing knowledge of drugs by the medical service providers and the increasing supply of essential medications in the country. Notably, the healthcare reforms in Mozambique have enabled access to medication by the citizen through affordable health insurance, which characterizes many people in rural and urban areas. During the emergence of COVID-19, Mozambique made essential medicine for vaccination available to control infections. Examples of the COVID-19 vaccines available for Mozambique citizens in proper dosage forms are Sinovac COVID-19, Moderna, Pfizer, Sinopharm, and Sinovac.

The study by Manda (2019) depicts that Zambia is characterized by healthcare policies that promote the prescription of medicine in proper dosage. Essential medicine is a genuine way of fighting against infections making the Ministry of Health adopt the use of ICT to promote the prescription of medicine in proper dosage. Through effective supply management, the suppliers of essential medicine have used their information system to secure the drugs essential to the current condition of the infections in Zambia. The information on the essential medicines is also generated electronically to ascertain their dosage, side effects, and administration format. The acquisition of essential medicine promoted the employment of qualified healthcare personnel that could prescribe the medication properly to the citizen.

Availability of Essential Medicines within Healthcare Systems in Assured Quality and Sufficient Information

Findings further revealed that the supply of essential medicine in the continent contributes toward 21st-century health needs in Africa by ensuring the availability of essential

medicines within healthcare systems in assured quality along with sufficient information regarding the medicines. For instance, enhancing healthcare needs in Sudan requires the legalization and the usage of essential medicine to cur the drug shortage in assured quality with sufficient information. The high prices of medicine in Khartoum states have denied the Sudanese population their fundamental human right of accessing affordable healthcare. As such, policymakers have decided to legalize the production and use of essential medicine to bridge the healthcare gaps in the nation (Ismaeil & Musnad, 2020). The essential medicines are around through the generic model LPG and the original brands of OB products. As such, healthcare facilities and pharmacies grant sufficient information to the public. When an individual is in dire need of healthcare services, the service providers should provide them with assured quality as dictated by the policymakers in Sudan.

Essential medicine has continued to aid in the drug shortage and high prices in South Africa. South Africa has developed policy frameworks to legalize the supply and usage of essential medicines in the right quantities to enable citizens to access them at pharmacies at affordable prices. Through a mechanism of tax reduction for pharmaceutical products, the nation made it possible for citizens without insurance to access medical services by visiting private medical service providers. Also, the flexibility in the use of essential medicines has created a framework through which the medical service providers have identified the reactions of the bodies of the patients to such drugs. Identifying the reactions has enabled them to undertake the research hence forming an essential way of curbing the healthcare challenges. The research by Duku (2022) examines how the prioritization of essential medicines determines the quality of healthcare

services by the private pharmacist. Therefore, South Arica has made a remarkable move in enhancing sustainable healthcare provision through essential medicine.

As a governmental organization, the Kenya Medical Supply Authority has managed to supply essential medicines to healthcare institutions as recommended by the healthcare professions. According to the research by Ndwigah et al. (2018), anti-malarial drugs like Artemisinin-based combination therapy have been made available in Embu County to treat falciparum malaria. Majorly providing children with Amoxicillin dispensable tablets has made the healthcare system work as per the recommendation of the World Health Organization. As such, recommending the proper dosage of amoxicillin oral suspension and amoxicillin dispensable tablets for children of 2-59 months has recorded proper adherence to the medication as per the study conducted by Angwa et al. (2020). Therefore, reducing child mortality and morbidity through assured quality and recommendation of anti-malarial and anti-pneumonia medication has contributed amicably to the 21st-century health needs in Kenya.

Essential medicine has been made available in several African countries with assured quality and sufficient information. Morocco strives to reach 21st-century health needs by increasing the quality of drugs and eliminating disease-resistant drugs. According to Bourhia et al. (2019), Morocco has scientifically validated medical herbs as an alternative for managing infections. The herbs have also been used to manufacture several medicines, delivered in assured quality with sufficient information for managing infections.

Asthma management has been made possible through the availability of essential medications like inhalers in the Kingdom of Swaziland. The drugs are available within the healthcare system hence adequately administered to the patients at affordable cost. Consequently,

several drugs are only found in the government healthcare system but cannot be found in clinics in Swaziland (Ncube et al., 2020). These drugs are managed by applying essential medicine lists, promoting the active fight against infections. Also, antiprotozoal medicines have been purchased by the government and distributed cheaply to health centers, enabling easy fight against protozoan diseases. As depicted by Odeku & Ola (2021), the Ministry of Health in Ivory Coast has distributed antimalarial drugs to several regions in public hospitals to promote the fight against the counterfeit drugs that had characterized most regions.

Thus, it can be generally agreed that the availability of essential medicines for managing tuberculosis, malaria, pneumonia, measles, and diarrhea are accessible to citizens in these nations, the availability of essential medicines within healthcare systems in assured quality along with sufficient information regarding the medicines, and the availability of essential medicines within healthcare systems in the proper dosage forms, are three major ways the supply of essential medicine across the globe has contributed to African nations' attainment of the 21st-century health needs.

Contribution of Africa's state governance toward the achievement of 21st century health needs in Africa

This section presents the findings of the fifth research question that sought to determine the contribution of Africa's state governance toward the achievement of 21st-century health needs. Several themes emerged during data analysis. Each of the themes is discussed below.

Ensuring Transparency in Handling Health Matters

Findings revealed that state governance contributes to the achievement of 21st Century health needs in African nations by ensuring transparency in handling health matters. Supporting

this theme, the literature reviewed revealed that the Senegalese government is making strides toward reforming public finance management to promote transparency and eradicate corruption with the help of World Bank funding and technical assistance (The World Bank, 2014). Also, the state government of Senegal has established National Anti-Corruption and Fraud Office (OFNAC) with the intention of fighting against corruption. Further, research revealed that OFNAC and the World Bank are closely working together to enforce a new law that requires all public officials to declare their assets (The World Bank, 2014). The Senegalese government is going the extra mile to create a culture of transparency throughout all of its agencies in order to combat corruption. It adopted a transparency code in 2012, becoming the first member of the West African Economic and Monetary Union (often referred to by its French abbreviation, UEMOA).

Supporting this theme, Pande et al. (2015) further reveal that one of the Egypt government's commitments is to attain UHC. The government considers the attainment of UHC a significant way of ensuring social justice in healthcare. Prioritizing services with the goal of ensuring that underprivileged groups are not left behind is necessary to enable the equitable, progressive realization of UHC. In order to achieve social justice in the healthcare sector, all Egyptians must have access to affordable health coverage that meets their constitutionally mandated needs while still falling within Egypt's financial constraints (Pande et al., 2015).

Furthermore, supporting evidence from Zimbabwe showed that the Good Governance for Medicines (GGM) project was implemented by Zimbabwe in 2015 with the goal of enhancing accountability and transparency within the pharmaceutical industry in the context of medication access. Specifically, GGM aims to protect the accessibility of medications in participating nations

by thwarting unscrupulous activities along the whole supply chain for pharmaceuticals (Maponga et al., 2022).

Promotion of Coalition Building in Health Care Delivery

Furthermore, findings revealed that governance promotes African nations' achievement of 21st-century health needs by promoting coalition building in healthcare delivery. The literature reviewed established that long distances between villages and health institutions and Senegal's huge rural population have historically made it difficult for people in Senegal to access health services (Cothran, 2019). Usually, community health providers provide healthcare services, education, and information from the health outreach huts with government support.

Supporting this theme Sharp (2022) also reveals that Egypt and the US have a close relationship because they have similar goals for regional security, economic growth, and peace in the Middle East. The strategic alliance is strengthened by strong linkages in the cultural and educational spheres. U.S. policy is driven by a desire to see Egypt flourish and remain peaceful, with a government that respects individual liberties and provides for its rapidly expanding population (Sharp, 2022).

Also, Sudan has adopted Primary Health Care (PHC) as the main strategy for healthcare since 1976, and throughout the future, strategies and plans of PHC will be emphasized (Ebrahim et al., 2017). The facilities of the PHC include PHC units served by community healthcare providers, while dressing stations are served by nurses. Dispensaries are under the care of medical assistants, while rural hospitals and help centers are run by doctors. Ebrahim et al. (2017) further explain that healthcare centers receive referrals from lower units. This provides evidence to showcase coalition building in healthcare delivery.

Data from DRC also supported this theme. Research revealed that the DRC government, in collaboration with the Global Financing Facility (GFF) and key stakeholders, has prioritized the development of financing mechanisms to support the expansion of the package of essential newborn, adolescent, maternal, child, and reproductive health and nutrition activities outlined within the National Health Development Plan 2019-2022, the country's investment case (Global Financing Facility, 2019).

Monitoring the Health System

Findings also revealed that governance contributes to African nations' achievement of 21st-century health needs through monitoring health systems to safeguard the public interest. This theme was supported by data from different African nations, including Egypt. The state government of Egypt has made achieving UHC a priority, seeing it as a means of achieving social justice in healthcare. UHC means that everyone, regardless of income, has access to affordable, high-quality healthcare that meets their individual requirements (Pande, 2015). Due to limited funding, this does not cover every feasible service, but it does cover a wide variety of essential ones that are coherent with other social objectives. UHC's goals are to guarantee everyone's access to high-quality medical care, shield everyone from preventable health problems, and prevent anybody from falling into poverty because of medical bills or lost wages (Pande et al., 2015). Since the UHC is overseen by the state government, it can be logically inferred that the government promotes the African nation’s attainment of 21st health needs through monitoring the health systems.

Implementation of Governmental Policies

The study findings also revealed that the government contributes to the achievement of 21st-century health needs among African nations through the implementation of government policies aimed at improving health outcomes. Supporting this theme, Tejuoso et al. (2018) revealed that good policymaking, budgeting, supervision, and accountability systems are essential to the success of any national health system if it is to meet its obligations to its citizens. Also, supporting this theme, Khalifa et al. (2022) explain that in order to provide its citizens with more health coverage, Egypt's government issued the Universal Health Insurance (UHI) Law in 2018. The law has had a huge potential to significantly accelerate progress toward UHC since its implementation began in July 2019. All Egyptians are expected to be covered by the UHI system when it is completely implemented, which is expected to take 12–15 years and will offer a benefits package of high-quality healthcare services and financial protection. This law could have a significant impact on Egypt's health system in relation to how health resources are raised, and finances are managed, pooled, and utilized to purchase healthcare services (Khalifa et al., 2022). Also, a study by Paul et al. (2020) that sought to examine the core capacities of the health system in Senegal to deliver UHC revealed that the Senegalese state government had facilitated positive progress toward the attainment of UHC. On the same note, Malakoane et al. (2020) add that the South African government has established strategies, charters, policies, and plans in place in an effort to improve public health system performance and health service delivery.

Data from Botswana also indicated that it is the responsibility of leadership and management; to guarantee strategic direction and supervision in regulating and executing all health-related services. The objectives of leadership and governance are to establish a health sector

platform for the provision of strategic guidance and oversight; to develop the National Health Strategic Plans (NHSP) to guide policy implementation; to clarify stakeholders' roles; to ensure regulatory frameworks' functionality; to distinguish implementation and inspection roles within the health sector, and to develop a Change Management Unit to aid in making reforms.

Equity Promotion

Findings further revealed that state governance in African nations contributes to the achievement of 21st-century health needs through promoting equity. Abubakar et al. (2022) explain that an efficient health system requires an equitable, efficient, and dedicated financing mechanism complemented by optional health insurance. Nations such as Nigeria have implemented or planned ambitious programs to deliver HIC (Abubakar et al., 2022). This is achieved through government support. On the same note, Khalifa et al. (2022) reveal that Egypt adopted the UHI law with the goal of covering all its citizens with sufficient financial protection. This would contribute to improved health outcomes, especially among the poor populations.

Further showcasing that the government contributes to the achievement of 21st-century health needs through equity promotion, Mogeni et al. (2019) revealed that the Kenyan government promotes healthcare Equity through UHC. UHC is defined as the provision of medical treatment to all citizens without regard to their ability to pay, with the goal of ensuring that all individuals get the care they need regardless of their socioeconomic status (Mogeni et al., 2019). It also means that everyone, individually and collectively, has access to the full range of necessary primary, secondary, tertiary, and tertiary-emergency care, as well as mental health and substance abuse treatments, without fear of financial hardship. On the same note, Laokri et al. (2018) urge that if a nation is going to develop a UHC plan that has any chance of success, it needs to take into account

data on ongoing disparities and give first priority to policies that reduce the financial toll of treating patients at the front lines of care.

The World Bank (2023) also revealed that to ensure that all citizens of Zimbabwe have the best possible health and standard of living, the Government of Zimbabwe (GoZ) is tasked with providing them with accessible, high-quality health care. To achieve this goal, it will need the participation of all Zimbabweans across all sectors of society, including people, communities, organizations, and the government (The World Bank, 2023).

Supporting evidence from Mozambique also revealed that Mozambique had had remarkable economic progress in recent years, yet the nation is still very impoverished. Widespread food insecurity and low health status are reflections of expenditure-based poverty indicators. In light of these issues, the Mozambican government is advocating for increased healthcare access that is both high in quality and equitable for all citizens. Recent government strategy has concentrated on building the rural health network after years of colonial neglect and systematic destruction of health institutions during the civil war.

This theme was also supported by evidence from Morocco. To promote health equity in the nation, the government of Morocco has chosen universal healthcare by instituting both mandatory health insurance and a scheme of health assistance to the poorest households. Indirect healthcare efforts focused on addressing the socioeconomic determinants of health and fighting poverty (Boutayeb et al., 2016).

Findings further revealed that the government of Burkina Faso eliminated healthcare user fees for mothers and children under the age of five in 2016 to promote health equity. Removing user fees would help even out healthcare access for people of different socioeconomic

backgrounds. Consultations for children under the age of five would be covered under this plan, as would those for pregnant women before, during, and after their pregnancies. The incidence and severity of illness are conceptually linked to the structural factors and processes that determine an individual's socioeconomic situation, as well as to intermediate determinants. Therefore, the elimination of user fees through the FHCP will operate as an enabling factor, allowing people and families to alter their health-seeking behavior as a result of the reduction in the financial burden of obtaining medical care. This will lead to increased use of healthcare services and a subsequent decrease in the under-5 death rate (Samadoulougou et al., 2022).

This theme was further supported by evidence from Mozambique, where findings revealed that All Mozambicans have a guaranteed right to medical care under the country's constitution (Llop-Gironés et al., 2019).

Coordinating the Provision of Healthcare

Also, findings revealed that African nations' governments contribute to the achievement of 21st-century health needs by coordinating the provision of health. Ezenwaka et al. (2022) claim that for Nigeria to progress on its commitment to UHC, more resources along with effective governance will be required. According to the authors, government health spending must be effective and efficient through the implementation of a strategic purchasing tool. Usually, Nigeria's municipal, national, and state levels of government coordinate health services are each respective level (Ezenwaka et al., 2022). Supporting this theme Skogg (2021) also reveals that the national government of Senegal has set ambitious goals for eradicating malaria, fostering a secure and generous funding system to receive generous contributions from private sector partners, improving maternal health, and fostering a sense of community ownership. Also, the Senegalese government

has established a sustainable model for attaining public health goals through the use of community health campaigns (Skogg, 2021). According to Skoog (2021), the success of the Senegalese public health system reflects the partnership and coordination of the UN SDGs. Therefore, this evidence justifies that the governance of African nations contributes to the achievement of 21st Century health needs through the cording provision of healthcare.

Regarding the government's contribution to the achievement of African nations' 21st-century health needs, findings revealed that Kenya has an official mechanism for collaboration with development partners via the sector-wide approach (SWAp), the goal of which is to have all major health sector financing support a single policy and spending program. Kenya has had yearly joint review sessions with stakeholders since the program's start (Mogeni et al., 2019). On a different note, research revealed that Kenya's decentralized form of government consists of a central government and 47 subnational county administrations with some degree of autonomy. Public contracts, public integrated, and private contracts are the three buying arrangements in the health care system. Kenya's national health insurance fund (NHIF) follows a public contract model in which it contracts public, private, and faith-based healthcare providers and pays for services according to the terms of the contract using a variety of PPMs. Obadha et al. (2029) further explain that the NHIF pays for outpatient care through capitation and inpatient care fee-for-service. Per diem is used to pay for inpatient care, while case-based payments are used for packaged benefits. In the third approach, known as a private contract, commercial health insurers and community-based health insurers (CBHI) enter into contracts with private, public, and faith-based providers on behalf of their enrollees and pay for inpatient and outpatient treatments using FFS.

Supporting evidence from Morocco further showed that more than 60% of Moroccans had some kind of medical coverage in 2018, and the government there is committed to expanding it to 100% by 2030 (Zahidi et al., 2022). Numerous strategies and interventions have been adopted by the Moroccan Ministry of Health and Social Protection (MSPS) to improve the health of the Moroccan population as a whole and to reduce regional disparities and health inequities (Zahidi et al., 2022).

Furthermore, supporting evidence from Mozambique revealed that in the 1990s, when the government produced its first five-year medium-term strategic plan and when requests for research from foreign organizations working in the country increased in frequency, health research gained prominence in Mozambique. The theme was also supported by evidence from Côte d'Ivoire (Ivory Coast). Duran et al. (2020) revealed that the Ivorian government is now revamping the country's healthcare system by shifting to strategic buying funded by a national health insurance program.

Financing Health Services

Lastly, governance contributes to the achievement of 21st-century health needs in African countries through directly financing health systems. This theme was supported by data extracted from different nations. For instance, Tejuoso et al. (2018) urge that although Nigeria’s health system is managerially and financially overwhelmed by multiple disease burdens, governance, and health financing are renowned contributors to the country's current state of the health system. Also, data from Senegal revealed that governance and financing are among the building block of the Senegalese health system. This implies that governance and financing contribute to improved health systems (Paul et al., 2020).

On a different note, Frazer et al. (2021) urge that the decentralized governance structure and local governments in Senegal be assigned overall budget management along with other services, government, and regulatory responsibilities. Salim and Hamed (2018) also reveal that the main source of finances in Sudan's health system is government expenditure. These scholars provide sufficient evidence that governance contributes to the achievement of healthcare services through directly financing health services.

Data from Tanzania also supported the idea that the government contributes to the African nation’s achievement of 21s century health needs. Renggli et al. (2019) revealed that the Tanzanian healthcare system relies mainly on central-level funding from tax revenues. On the same note, Afriyie et al. (2021) revealed that in Tanzania, the financing of iCHF is via premiums received from households and the national government’s contribution. These findings were further supported by Maluka et al. (2018), who urged that Tanzania's healthcare system is financed by two main sources: development partner's support and central support financed by the Tanzania government tax revenue.

Supporting data from Cameroon revealed that Cameroon’s healthcare system is pluralistic because it involves various sources of financing, among which government is its main source of finances. Other sources include public enterprises, private enterprises, households, NGOs, and religious missions (Sieleunou et al., 2021).

Supporting evidence from Ghana showed that compared to other countries, Ghana seems more dedicated to improving public health. Government health spending rose from US$53 per capita in 1995 to US$60 in 2014 (Adua et al., 2017). The authors added that the health sector in Ghana has expanded as a result of the country's strong economic expansion during the last two

decades. Spending on public healthcare has climbed by 11% since 2001, outpacing growth in government income by 15%.

This theme was also supported by evidence from Zimbabwe. Mureyi et al. (2022) revealed that healthcare in Zimbabwe, a nation with a population of 14.86 million, is provided by both the government and the private sector. After gaining its independence from colonial control in 1980, the government of Zimbabwe prioritized expanding citizens' access to quality healthcare by investing heavily in public health facilities and programs (Mureyi et al., 2022).

Additionally, supporting evidence from Burkina Faso showed that the government of Burkina Faso is committed to health care by allocating 9 percent of GDP to it; this translates to just around $17 per person per year in 2018 dollars. This is a clear indication that the government funds the healthcare sector.

Furthermore, evidence from Equatorial Guinea revealed that due to a lack of reliable development partners, Equatorial Guinea must take full responsibility for its own progress. Public funds provide for 95% of overall health expenditures. Hence the country does not rely on money from other countries (World Health Organization, 2017).

4.4. Discussion of Findings

This section presents an evaluation of the study findings. It aims to give the reader a comprehensive understanding of the meaning of the study findings. Also, an interpretation of the findings in light of the theories discussed in Chapter 2 is provided. The section is organized by the research questions.

Research Question 1

Three themes emerged from the data gathered to address the first research question, which sought to uncover the contribution of health financing toward the achievement of 21st-century health needs among African countries. They included well-designed health financing policies, efficient money transfer systems in healthcare facilities, and the availability of healthy financing to raise revenue for healthy institutions. The first theme means that implementing well-designed health financing policies has led to African nations' attainment of 21st-century health needs. This is because most of the implemented health financing policies emphasize the need to spend wisely on cost-effective and highly effective health services that are vital for attaining health-related sustainable development goals. Also, findings showed that healthcare systems in some countries, such as Nigeria, face challenges due to a lack of well-developed health financing systems. Also, countries such as Senegal have been found to focus on implementing health financing policies as a means to achieve the UHC. This is clear evidence that the implementation of well-developed health financing policies assists in achieving the 21st- century health needs such as UHC and SDGs.

The second theme, efficient money transfer systems in healthcare facilities, implies that having efficient money transfer systems assists African nations in achieving 21st-century health needs. This is because these systems facilitate a smooth and timely transfer of payment to the healthcare systems providing medical services. Consequently, this improves the health service delivery to low-income earners. For instance, Egypt has expanded its Family Smart Card (FSC) program to provide aid to low-income households. Also, NHIF is an example of an efficient money transfer system in Kenya that provides sustainable, accessible, quality, and affordable health insurance to Kenyans. M-Tiba, which also operates in Kenya, allows low-income earners to save

money on their phones to use later to pay for medical services. Thus, when seeking medical services, they are able to pay the bills on time. Cameroonians also use Mobile Money Transfers to pay for medical services. Mobile money transfers are easily accessible and easy to use when making payments. This makes it easier for patients to access medical services. Ensuring healthy lives and the promotion of well-being for all individuals regardless of their age is one of the 21st-century health needs in most African countries. Therefore, when an individual is capable of paying for quality healthcare service, this will ensure that this goal is achieved.

The theme of the availability of health financing to raise revenue for healthcare institutions means that sources of health finances that assist healthcare institutions in pooling funds and raising revenue for use in delivering medical services assist African nations in accomplishing 21st-century health needs. For instance, the improvement in people's health status in Egypt, where life expectancy has improved from 64.5 to 70.5 years, is attributed to the healthcare financing agents and health financing sources. Also, it was established that some nations, such as Senegal, are only able to attain UHC through sustainable funding. This means that without sustainable financing, the country cannot achieve UHC. Also, Tanzania wishes to improve the efficacy of the primary healthcare system through the implementation of Direct Health Facility Financing. This means that financiers of healthcare systems in African nations assist the countries in achieving 21st-century health needs, and without the financiers, the African nations will continue to face a health crisis.

The findings obtained for these findings are what the researcher expected. This is because the literature reviewed established that health financing is a major element of the health systems that promotes the improvement of the UHC through financial protection and effective service

coverage. Implementing well-designed health financing policies and efficient money transfer systems in healthcare facilities promotes effective service coverage, while the availability of healthy financing to raise revenue for healthy institutions relates to financial protection.

Research Question 2

Five themes emerged from the data gathered to address the second research question, which sought to uncover how the Africa CDC contributes to the achievement of 21st-century health needs in Africa. They include facilitation of the centers' strategic agenda of quick and effective detection, surveillance, and response, strengthening the capability and capacity of public institutions of health, strengthening partnerships to spot and retort quickly and efficiently to threats and outbreaks of diseases, sharing and exchanging lessons and knowledge from public health interventions with the other AU member states, achievement of the existing international health targets and SDGs, UHC, and International Health Regulations (IHR), and public health emergency preparedness.

The first theme means that Africa CDC has facilitated the strategic health agenda of quick and effective detection, surveillance, and response to health issues in African countries. This has been achieved through collecting, analyzing, and managing healthcare data to stipulate healthcare actions. When the Africa CDC makes it easier and faster to survey, detect, and respond to a disease outbreak, this definitely improves the health of the affected people and improves their well-being, and immediate action is taken against the emerging health issue.

The second theme means that the Africa CDC strengthens the capability and capacity of public health institutions. This has been achieved through the financing of medical institutes. When Africa CDC provides public health institutions with finances, these finances are used to purchase medical equipment, construct medical infrastructures, and hire qualified medical professionals.

Also, other finances are used to finance medical research helping healthcare organizations to discover better ways of dealing with some sicknesses or even discovering medications for complicated sicknesses. Better medical equipment, skilled medical practitioners, and modern healthcare infrastructures lead to improved healthcare.

The third theme means that Africa CDC strengthens partnerships between national organizations to spot and retort quickly and efficiently to threats and outbreaks of diseases. Some African countries, such as Nigeria and Tanzania, with the help of the Africa CDC, have worked collaboratively with WHO to mitigate communicable diseases such as malaria, Ebola, COVID-19, and HIV/AIDS. Since these are some of the major health challenges facing African nations, fighting the threat of these diseases has resulted in improved health incomes among Africans. For example, fighting the threat of malaria has improved the life expectancy of Africans. Also, through collaborations with WHO, African nations have managed to reduce the number of deaths due to coronavirus infection.

The fourth theme implies that the Africa CDC has assisted African nations in achieving the internal health targets, UHC, IHR, and SDGs. To achieve this, the Africa CDC has developed systematic approaches and plans by sensitizing the public on the disease prevention and response mechanism. UHC, IHR, SDGs, and international goals are among the 21st-century health needs African nations are looking forward to achieving.

The last theme means that Africa CDC enables African nations to attain 21st-century health needs by promoting public health emergency preparedness. Notably, the Africa CDC facilitates effective public health emergency preparedness in African countries by supporting the testing and development of multi-sectorial and multi-hazard response and preparedness plans to help public

health emergencies at the regional and national levels. If the tested plans are ineffective, they are improved to ensure that they work effectively. When African nations effectively respond to emergency health issues such as disease outbreaks, this ensures that even when outbreaks occur, people's quality of health and well-being is not adversely affected. Thus, the majority of people enjoy healthy lives even after disease breakouts.

The findings of this research question are what was expected because the literature reviewed in Chapter 2 revealed that the goal of the Africa CDC is to facilitate strategic agenda of quick and effective detection, surveillance, and response to health issues. Also, chapter two revealed that the Africa CDC works on matters related to disease control and prevention and other emerging issues. All the means that the study has established relating to how the Africa CDC contributes to health revolves around the established goals of the Africa CDC that were covered in Chapter 2.

Research Question 3

Four themes emerged from the data gathered to address the third research question, which sought to uncover how access to quality, safe, and efficacious medicine contributes to the achievement of 21st-century health needs in Africa. These themes included the supply of medical equipment, sufficient supply of medicine, promotion of access to new and quality medical instruments, and faster access to new and quality medical instruments.

The first theme, the supply of medical equipment, means that a sufficient supply of medical equipment among African nations contributes to the achievement of 21st-century health needs in these countries by promoting primary access to healthcare. Findings revealed that the AMF initiative promoted medical equipment supply among African countries to bridge the existing

medical gap. Bridging these gaps assist in achieving 21st-century health needs. Also, effective medical equipment provides an opportunity for the provision of quality medical services contributing to the achievement of 21st-century health needs.

The second theme, sufficient supply of medicine, implies that a sufficient supply of medicines facilitates faster achievement of 21st-century health needs among African nations. However, poor medical supply systems among African nations have challenged medical supply delaying the achievement of 21st-century health needs among African nations. To overcome this challenge, some nations, such as Senegal, have opted to use locally manufactured drugs that are easily accessible. Also, other countries such as Sudan have liberalized the prices for medicines to make them affordable to low-income earners. African nations are striving to improve the supply and access to quality medicine in order to fasten their achievement of 21st-century health goals.

Furthermore, the theme of the promotion of access to new and quality medical instruments means that the use of quality medical instruments contributes to the achievement of 21st-century health needs in Africa. One of the most commonly adopted quality medical equipment in African countries is e-health. E-health has proven to improve the quality of health care by improving various aspects of patient care, such as effectiveness, safety, communication, timeliness, patient-centeredness, equity, education, and efficiency. For example, the Senegalese government has implemented the use of drones to conduct medical surveillance. This has allowed healthcare providers, as well as medical researchers, to produce innovative and more effective medical instruments. Consequently, this has facilitated the achievement of 21st-century health needs. On the other hand, KEMSA works collaboratively with the county government to facilitate the supply of quality medical instruments. Findings revealed that KEMSA has so far managed to

supply efficient, effective, and quality medical facilities and instruments to the county government health departments.

The fourth theme means that faster access to new and quality medical instruments enables African nations to achieve 21st-century health needs. Sudan, in its efforts to attain 21st-century health needs, has established a framework to aid in the acquisition of new and quality medical instruments by using a regulatory approach that allows medical privatization to work efficiently, thus, mitigating the bureaucratic and government interference of the medical supply chain. SA, along with other African nations, has also strived to create a faster path for the acquisition of quality medical instruments. Faster access to quality medical equipment facilitates the achievement of 21st-century health needs among African countries helping with quick and correct diagnoses of patients. Consequently, this saves patients a significant amount of medical costs as quick and correct diagnoses minimize medical tests, hospital stays, and appointments. This makes healthcare affordable to economically disadvantaged individuals.

The findings of this study were expected because they relate to the literature reviewed in chapter two. From Chapter 2, it was discovered that lack of access to medicine is a significant factor hindering better health in African nations (Levesque et al., 2013). The literature reviewed further revealed that many African nations face limited access to medicine and medical equipment, causing very severe suffering and deaths among Africans (Pheage, 2017). This aligns with the study findings because data from African nations shows how different countries are striving to ensure fast access to quality medicines and medical equipment.

Research Question 4

Three themes emerged from the data gathered to address the fourth research question, which sought to explore the contribution of the supply of essential medicines in the continent towards the achievement of 21st Century Health needs in Africa. They included the availability of essential medicines for managing malaria, pneumonia, tuberculosis, measles, and diarrhea in Africa, essential medicines within healthcare systems in the proper dosage forms, and essential medicines within healthcare systems in assured quality and sufficient information.

The first theme means that the availability of quality and sufficient medicines for managing pneumonia, tuberculosis, malaria, measles, and diarrhea facilitate African countries' achievement of 21st-century health needs. Measles, tuberculosis, diarrhea, and malaria are common sicknesses facing African nations. A consistent and sustainable supply of essential medicines to deal with these sicknesses helps reduce the suffering and number of deaths caused by these diseases. Reduction of premature deaths is one of the 21st-century health goals. For instance, ARVs have become easily available among Africans infected with HIV/AIDs allowing the infected people to live longer and healthier lives. To reduce premature deaths, Kenya has improved the vaccination of children against measles. Also, a sufficient supply of anti-malaria drugs in DRC has enabled the Ministry of Health to reduce mortality and morbidity.

The second theme means that the availability of essential medicines within the healthcare system in the proper dosage forms facilitates African nations' attainment of 21st-century health needs. When medicines are readily available in proper dosage form, this makes it easier for healthcare institutions to improve medication management for patients. Healthcare professionals are able to provide the correct medicine at the right time and the correct dose in a safe way. Also,

the availability of essential medicines in the proper dosage forms ensures that all patients receive all the types of medicine prescribed by the doctor. Notably, every medication is manufactured for a specific purpose and is described to a patient for specific reasons. For instance, some medicines help in prevention, others ease pain, and others are curatives. When a patient does not get any of the prescribed drugs, they do not receive the quality of care needed. Thus, when all essential medicines are available in the proper dosage, this facilitates the attainment of 21st-century health needs. Also, the availability of essential medicines in the proper dosage forms reduces the risks of negative medical side effects. Consequently, this results in positive health outcomes.

The last theme implies that the availability of essential medicines within African nations' healthcare systems in assured quality and sufficient information facilitates the achievement of 21st-century health needs in these countries. Sufficient and assured quality medicines minimize the risk of negative medical effects on an individual. This is because patients are not administered counterfeit drugs. Poor-quality medicines may severely affect an individual, and others may even cause death. Furthermore, the availability of sufficient and assured quality essential medicines eases the medication routine minimizing medical errors. Consequently, this improves the quality of medical care. The findings of this research question were expected because they are consistent with the literature reviewed, which showed that the availability of sufficient and assured quality medicine leads to better healthcare and reduces suffering.

Research Question Five

The gathered data addressing the fifth research question led to the emergence of six themes that uncover the state government's contribution to the 21st-century health needs in Africa. The themes included enhancing transparency in handling health matters, promotion of coalition

building in healthcare delivery, monitoring the health system, implementation of government policies, promotion of equity, and coordinating the advancement of healthcare,

The first theme of enhancing transparency in handling health matters describes the move by the African nations to eradicate the detriment of corruption in health sectors, creating a transparent mechanism of financing, managing, and coordinating health matters. According to the findings, African governments have reformed public finance to eradicate corruption with the assistance of financial institutions like the World Bank. Also, Universal health coverage has reduced health malpractices to a minimal level, making it easy to enhance sustainable development and financial goals in the health sectors.

The second theme of promoting coalition building in the healthcare industry means that decentralizing the healthcare delivery system will enable the citizen at the grassroots level to receive healthcare services because of its decentralization from the central government. The findings reveal that many African nations like Kenya, Egypt, and Sudan have decentralized the health sector to enhance the faster delivery of health services to remote areas. Decentralization is based on devolving the health units to the regional and county governments to enable amicable coordination between the central and provincial governments in building health infrastructures like dispensaries and facilities to support healthcare. The financial mechanism has also been made in DRC, Sudan, and Kenya to aid in coordinating healthcare service delivery.

The third theme of monitoring the health system as a contribution of the state government to the 21st healthcare needs in Africa depicts the market for the government to monitor the health system to achieve sustainable development goals in health sectors. The findings reveal the priorities set aside by the African government like Egypt in creating social justice and

institutionalizing Universal Health Coverage to enable everyone, regardless of social status or income, to access affordable and high-quality healthcare. Consequently, the findings reveal a government-sponsored health system that monitors the healthcare industry's facilities, human resources, and supply chains. In support of the predicament, Kenya has institutionalized the healthcare system by devolving the health units to enhance easy monitoring of the healthcare institutions.

Implementation of government policies in healthcare as the fourth theme depicts the move the governments have taken in making a sustainable budget for the health departments, creating accountability, and making sustainable policies to attain the goals and objectives of 21st-century healthcare developments in Africa. In support of the implementation of government policies, the findings reveal that countries like Egypt implemented the UHI law in 2018, which has helped develop and achieve the Universal Health Coverage goals towards achieving 21st-century health needs in Africa. Through the National Health Strategic Plan in Botswana, the findings depict the move by the Botswana government to implement the policies that clarify the role of the healthcare stakeholders and the change management units that could lead to faster reforms in health sectors.

The fifth theme on the promotion of equity describes the steps the African governments have revamped to promote equitable distribution of the resources like finances, human resources, and infrastructure to enable 21st-century healthcare needs. Through the use of equity promotion examples, the findings reveal that applying the UHI policy in Egypt has promoted equity in a healthcare setting. All citizens are covered with durable financial protection and hence can seek quality and sustainable healthcare services regardless of their area of residence and social status. The social protection program adopted by the South African government has continued to promote

health equity. In Kenya, the findings reveal that UHC has promoted health equity and the use of the Kenya Health Sector Strategic Plan and the Kenya Health Policy Framework adopted in 2010.

As an effort to achieve the 21st-century healthcare needs in Africa, the African government has coordinated the provision of healthcare, which means that the governments have conceptualized the strategies through which the healthcare stakeholders and leaders have enhanced the effective delivery of services through the collaborative and coordinative approach. As per the comprehensive finding, it is evident that the African governments use the municipal, state, county, and national governments to coordinate healthcare delivery at each level. In Senegal, the government has tried to achieve healthcare needs by eradicating chronic diseases like malaria through coordination and support from the private sector and other international organizations. Kenya has also coordinated the management of the healthcare system by creating the 47 county governments that work through devolved units in the health sector hence easy coordination of the healthcare services.

Furthermore, the last theme is based on financing the health sectors, which explains the achievements of the African governments in enhancing 21st-century healthcare goals. The findings support the argument by describing how the government decentralized its healthcare management through devolution and the provision of budgets to combat chronic diseases like malaria. In the case of Tanzania, financing healthcare in Africa has been accelerated by the contribution from the national governments and individual households. The pluralism finance system of healthcare in Cameroon continues to describe how the government of Cameroon has strived to achieve the 21st-century healthcare needs in Africa since the funding is from NGOs, private organizations, and religious support.

The findings in this research question are our expectations because of the close relationships with the literature review information from chapter two. According to the literature review in chapter two, poor governance hinders the achievement of healthcare needs in Africa. As such, several African countries have resolved to institutionalize good governance to promote the sustainable provision of health services in Africa. Therefore, the data from different countries align with the literature review sources on how the government of African nations has promoted health equity, coalition building, coordination, monitoring, and health promotion through effective management and financing.

One of the theories chosen to guide this study was a financing theory, specifically Pecking Order Theory (POT). This theory stipulates that managers prefer internal funding over external funding. Based on the study findings, it was found that most African nations have developed initiatives to facilitate internal funding instead of borrowing funds to meet 21st-century health needs. The Juran Quality Trilogy theory was also chosen to guide this study. This theory designates a three-tenant management policy for quality improvement, including quality control, planning, and improvement. In relation to this theory, findings revealed that AU contributes to the attainment of 21st-century health needs among African nations through measures that ensure quality control, quality improvement, and quality planning of medicines and medical equipment. The classical theory describes the economy as a self-regulating state when circumstances result in surpluses or shortages in the natural output and self-adjustment mechanisms are used to restore the economy to its natural level. This study's findings revealed that the African nations are using self-adjustment mechanisms to fight the health crisis they are currently in, such as promoting access to quality and

sufficient medicines and medical equipment through government-sponsored programs and initiatives.

In relation to the conceptual framework, which indicates that policies, local politics, and bureaucracy moderate the relationship between the study's independent variables: health financing, Africa CDC, governance, access to essential medicines, and supply of essential medicines, and the dependent variables: malaria, tuberculosis, HIV/AIDS, diarrhea, and COVID-19, it has been established that this relationship exists, where health financing, Africa CDC, governance, access to essential medicines, and supply of essential medicines contribute to fewer cases of malaria, tuberculosis, HIV/AIDS, diarrhea, and COVID-19 through policies, bureaucracy, and local politics.

These findings led to developing a new theory, mainly the Health Systems Dynamics Theory. This theory evolved from a thorough analysis of the extensive findings derived from the study. Rooted in the recognition of the intricate dynamics influencing health outcomes in African Union member states, the theory took shape by identifying key components such as sustainable financing, the supply of essential medicines, and the role of the Africa CDC. These components emerged as interconnected variables crucial for understanding the complex nature of health systems. The formulation of the theory was guided by a commitment to acknowledging the dynamic and evolving landscape of health challenges in Africa. As the study unfolded, it became evident that adaptive, collaborative, and data-driven approaches were essential, prompting the integration of these principles into the theoretical framework. Governance emerged as a pivotal factor, shaping the trajectory of health outcomes, and the theory emphasized the seamless integration of governance structures, financial mechanisms, and health intervention strategies.

Based on the findings, the theory provides a conceptual framework emphasizing the interconnectedness of variables within health systems. It calls for adaptive, collaborative, and data-driven approaches to address Africa's dynamic health challenges. The theory underscores the need for a holistic understanding of health systems, positioning governance as a pivotal factor in shaping the trajectory of health outcomes within the AU member-states. The health systems dynamics theory posits that health systems are intricate networks comprising various interconnected components, including governance structures, financial mechanisms, and health intervention strategies. These components must be seamlessly integrated to ensure a coordinated and effective health system. Also, the theory recognizes the need for adaptive governance mechanisms that respond dynamically to the evolving health challenges in Africa. Governance structures should be flexible, responsive, and capable of adjusting strategies based on emerging health trends and global developments. However, it is important to stress that this theory has some shortcomings as it doesn't measure or weigh in the contribution/impact of these themes in the attainment of health needs.

4.5. Summary

Various African nations' health systems are involved in suffering from numerous challenges that include political, financial, technical developments, institutional, and human resources. Thus, these health systems are distinguished by inadequate and inefficient working modules and decrepit and poor infrastructure. Specifically, the AU's weakness is that it has failed to meet ordinary Africans' health needs. Although researchers have strived to examine the weaknesses and strengths of AU, its contribution towards the achievement of 21st-century health needs has not been studied. Thus, this research's goal included five research questions. Initially,

the study goal was to examine the contribution of health financing toward the attainment of 21st-century health needs in Africa. Results revealed several initiatives and health financing in Africa have aided in meeting the health needs of the 21st century in a better way. Generally, regarding health financing contribution toward various African countries' attainment of 21st-century health needs, three major themes emerged. The immediate involves improving well-designed health financing policies, such as spending money wisely and buying healthcare supplies in the most cost-effective way. The study revealed that the implementation of well-designed health financing policies has contributed to African nations achieving their 21st-century health goals. These policies prioritize cost-effective and efficient health services aligned with sustainable development goals. For instance, countries like Senegal focus on these policies to achieve Universal Health Coverage (UHC). However, challenges are evident in countries like Nigeria, where underdeveloped health financing systems hinder progress. It was also found that efficient money transfer systems play a vital role in helping African nations meet modern health needs. These systems enable smooth and timely payments to healthcare providers, benefiting low-income individuals. Examples include Egypt's Family Smart Card program, Kenya's NHIF and M-Tiba initiatives, and Cameroon's Mobile Money Transfers. Accessible and easy payment methods enhance healthcare service accessibility and quality, aligning with the goal of promoting well-being for all. Also, the availability of health financing sources that pool funds and generate revenue for healthcare institutions is crucial for African countries to meet 21st-century health needs. Sustainable funding, like that seen in Egypt and Senegal, is necessary for achieving UHC and improving health outcomes. Initiatives such as Tanzania's Direct Health Facility Financing aim to bolster primary healthcare efficacy through funding. Financial support from various sources is integral to

overcoming health crises in these nations. Ezenwaka et al. (2022) provided that multiple health financing policies stress the need to spend wisely on cost-effective and high-impact services that are crucial to attaining health-related Sustainable Development Goals (SDGs) and national goals. When all individuals in most African countries have access to health care, this ensures achieving the SDGs. As portrayed by Bames et al. (2016), Senegal is an excellent example of a country that has been able to implement Universal Health Coverage to improve the financial services and policies of health care.

Moreover, Atim et al. (2021) reveal that the Kenyan government envisions using the already established National Hospital Insurance Fund (NHIF) as a vehicle to facilitate the implementation of UHC; this shows health financing contributes to African nations' achievement of 21st-century health needs. Cameroon's data also support the current theme where itself and DRC have established sustainable healthcare policies to eliminate the pandemic and tropical diseases. Also, Sudan has been able to get rid of various bad medical funding practices by developing brand-new policies for managing health care. In addition, with the NHIF's help, Universal Health Coverage (UHC) is being put into place in Kenya. Also, Tanzania's government established the improved Community Health Funds (iCHF) as an insurance program to help reach the 21st-century healthcare goals to stop disease spread.

Furthermore, findings showed that health financing contributes to the attainment of African countries' 21st-century health needs by ensuring smooth and timely money transfers to providers for treating patients in healthcare facilities. According to Pande et al. (2015), this is clearly where in Egypt, smart cards for families have made it possible for low-income families to get healthcare assistance. In Kenya, the NHIF has established a way for moving money from their treasury to the

healthcare facilities after the services have been provided to multiple patients; this portrays easy and quick money transfers. Also, findings revealed that Cameroonians use Mobile Money Transfers (MMTs) to pay their healthcare bills, even in remote localities. Similarly, Tanzania's government has established a new, conditional cash transfer program to help people get health care. Lastly, findings show that healthcare financing has aided in increasing revenues for various healthcare facilities. Through this practice, Nigeria has availed more money to pay for healthcare facilities by giving increased money to the health ministry in the budget. Egypt is a middle-income country. Ahmad et al. (2020) reveal that it has found several sources of income, which it has used to continue paying for health care. Also, Senegal placed money into health care through USAID-backed programs such as the health system strengthening plus. In addition, in Kenya, Direct Health Facility Financing and the NHIF's Universal Health Coverage have contributed to more open, cooperative, and stable healthcare funds to meet healthcare's long-term goals in the current 21st century. Significantly, USAIs and NGOs have aided DRC, and Cameroon acquired revenues to fight tropical diseases and other infections such as HIV/AIDS.

The second research question’s goal was to define how Africa CDC contributes to achieving 21st-century health needs in Africa. The study found that the African Centers for Disease Control and Prevention (Africa CDC) emerges as a beacon of hope and progress in the pursuit of 21st-century health needs for African nations. Its multifaceted contributions across themes such as strategic health agendas, institutional strengthening, partnerships, health target achievements, and emergency preparedness collectively drive improvements in health outcomes and healthcare systems. As the organization continues to make strides, it reinforces the notion that a united and coordinated approach is essential to addressing the diverse health challenges faced by African

populations today. Also, findings showed that the Africa CDC (Center for Disease Control) has progressed to play an essential role in African countries by helping the center to develop a strategic plan for quick and effective infection detection, surveillance, and response. In Egypt, it has significantly worked progressively to close the gap in disease detection through the use of public health agencies. Talaat et al. (2016) provide that the Africa CDC in Egypt has kept track of acute healthcare events by having hospitals do assessments on how to treat the illness and by pushing for e-health utilization. Also, Africa CDC has continuously assisted South Africa in the surveillance and efficient detection of notifiable diseases to enhance the rapid response to disease outbreaks. In Nigeria, where the pandemics have been dealt with in a logical way by the Africa CDC through effective surveillance, testing, and drug distribution, it is clear that the infections were dealt with quickly. The Africa CDC is working with WHO and USAID to stop the spread of HIV/AIDS in Nigeria. In Botswana and Kenya, Africa CDC has undertaken various research to ensure infectious diseases detection. Also, CDC has strengthened the capability and the capacity of public health institutions by funding medical research institutes such as in Egypt. In Senegal, Africa CDC was able to establish a public emergency response after the anthrax outbreak in 2001. Also, DRC and Africa CDC have ensured International Health Regulations implementation to control upcoming pandemics like Ebola.

Moreover, Africa CDC in Africa has strengthened the partnership between national organizations to resort to the threats and outbreaks of disease in Africa easily. It has also developed and created a platform through which health organizations from AU member states have shared knowledge, skills, and ideas in combating contemporary health challenges. Also, according to Mamuye et al. (2022), meeting international health targets in Africa has generated an examination

of SDG, UHC, and IHR in Botswana. In addition, Africa CDC ensures effective public health emergency preparedness in African countries; this is by supporting multi-sectorial and multi-hazard response testing and development and preparedness plans to help public health emergencies at the regional and national levels.

The third research question was aimed at examining how access to quality, safe, and efficacious medicine contributes to the achievement of 21st-century health needs in Africa. Findings showed that access to safe, effective, and high-quality medicine has also helped Africa meet the health needs of the 21st century by making it easier to get medical equipment. For example, the medical equipment supply has contributed to improved health. Through KEMSA, Kenya has also made it easier to get medical tools. Gbadeyan et al. (2017) reveal the inadequate medical equipment in Nigeria, although increased respiratory infections have contributed to effective measures to fight disease spread. Also, Egypt's efforts in battling the pandemic were achieved and accelerated by various effective healthcare measures. Also, government officials in Kenya have decided to waive the value-added tax on medical equipment imports, lowering the costs of supplying medical equipment.

The fourth research question was aimed at exploring the contribution of the supply of essential medicines in the continent towards the achievement of 21st-century health needs in Africa. Findings showed that essential medicine supply globally contributes to 21st-century health needs in Africa by ensuring that various essential medicines for managing diseases such as tuberculosis, malaria, pneumonia, measles, and diarrhea are accessible to citizens in these nations. Nigeria has gained the ability to reduce child death and illness rates by ensuring that children can acquire the medicines they require to ensure treatment of diseases like malaria and pneumonia.

Also, various Sub-Saharan African countries like South Africa have increased the ARVs supply, which are essential medicines for controlling HIV/AIDS to attain the related SDGs. Also, Kenya has eased the acquisition of medicines by individuals through UHC. Also, according to Mandoko et al. (2018), DRC has worked to obtain anti-malaria drugs for people at a considerably low cost.

The final research question is aimed at determining various ways in which Africa's state governments have contributed to the attainment of 21st-century health needs in Africa. These include such as ensuring transparency in handling various health matters. For instance, according to The World Bank (2014), Senegal's data revealed that the country had established the OFNAC (National Anti-Corruption and Fraud Office) to battle corruption in the existing medical sector. Also, Egypt has developed a more open medical supply system by ensuring the improvement of social justice in healthcare. Also, various state governments have promoted coalition building in healthcare delivery. According to Sharp (2022), findings showed that the U.S. and Egypt had worked together to better healthcare services results to ensure the construction of alliances in the field. Also, African nations like DRC and Tanzania have ensured the utilization of the Health Facility Governing Committee to ensure more open things. Through UHC initiatives help, the nations such as Egypt, South Africa, and Kenya check their healthcare systems.

Moreover, the Health Systems Dynamics and Coordination Theory recognizes the central role of sustainable financing as a foundational element in achieving robust health outcomes. It posits that adequate funding ensures a consistent supply of essential medicines, addressing the challenges posed by irregular or inadequate drug supplies in African healthcare institutions. The theory further acknowledges the significance of the Africa CDC in enhancing health emergency preparedness, emphasizing its contribution to minimizing mortality rates from prevalent diseases

like malaria, pneumonia, tuberculosis, and other infections. By fostering partnerships and collaborative responses among member states, the Africa CDC becomes a crucial ally in achieving 21st-century health needs. The Health Systems Dynamics Theory, therefore, not only provides a conceptual framework for understanding the interplay of variables within health systems but also guides actionable strategies for sustainable financing, robust healthcare delivery, and effective response to emerging health challenges in the African context.

CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

The African Union plays a pivotal role in addressing 21st-century health needs across the continent, advocating for improved healthcare access, infrastructure, and disease prevention measures. Through collaborative efforts with member states and international partners, the African Union implements initiatives aimed at tackling major health challenges such as infectious diseases, maternal and child health, and non-communicable diseases. However, Africa's health system still face challenges in achieving healthcare needs. Research by Oleribe et al. (2019) shows that African nations' health systems suffer from various challenges, including political, financial, technical developments, institutional, and human resources. The major setbacks of these challenges are that insufficient and inefficient working modules and decrepit and poor infrastructure characterize health systems across African nations. Chiedozie (2016) stated that the consequences for human health are increasingly becoming worrisome. In a brief description, for instance, due to poor health systems, communicable and parasitic diseases such as malaria, tuberculosis, and HIV/AIDS have significantly reduced life Expectancy (DeLaet & DeLaet, 2015). In another study, the scale of the HIV/AIDS pandemic in Southern Africa, where HIV/AIDS prevalence is 18.1%, has been found to result in a rise in the number of AIDS orphans throughout the region (DeLaet & DeLaet, 2015). The consequences of this have made it difficult for governments and civil society in impacted nations to address the needs of such children.

Furthermore, according to WHO (2021), Africa contains 90% of the world's malaria cases, projected to number between 300 and 500 million and 60% of the world's HIV/AIDS cases. Additionally, as of 2017, Sub-Saharan Africa (SSA) was reported to account for around two-thirds of all maternal deaths worldwide (WHO, 2019). Elsewhere, the coronavirus outbreak exacerbates

health issues in African nations, demanding the creation of effective remedies (Kuehn, 2021). Due to advances in human health research and societal developments, health promotion has evolved in response to the rising number of health challenges (Edington et al., 2016). The researchers further project that in 25 years, the world will experience advancement in health-related human knowledge. With the Millennium Development Goals (MDGs) declaration in 2000, the twenty-first century began with the first global efforts to enhance the health of all people.

Laaser and Brand (2014) stated that better health outcomes were achieved due to these efforts, especially for women and children, and the most deadly communicable illnesses decreased. Also, the formation of the AU, which first aim was to address the continent's growing health concerns played a part. Bamidele (2016) highlighted that in 2002, the 54 sovereign governments of Africa joined the AU, founded by African leaders. The AU's roles and duties included fostering solidarity and togetherness among African nations, advancing peace and security, defending the sovereignty of member states, and advancing sustainable development. To date, the achievements of the AU have been seen included pressuring African countries to adopt more liberal policies and passing legislation regarding the treatment of refugees. The AU's shortcoming is that it has not adequately addressed the health needs of ordinary Africans. In addition, it has prevented ordinary Africans from taking part in health-related choices, allowed them to continue depending too heavily on foreign help, and prevented them from holding African politicians responsible (Tieku, 2019). Despite the challenges experienced earlier, the researcher has strived to investigate the weakness and strengths of AU, and there is still a research gap, where its significance to meeting the health demands of the twenty-first century has not been researched thoroughly.

This research study had five goals; The first goal was to assess how health financing helped Africa meet its health needs for the twenty-first century. After that, it was followed by a study on how Africa CDC helps Africa meet its health needs for the twenty-first century. Thirdly, the study defined how access to quality, safe, and efficacious medicine contributes towards 2ist century health needs among African nations. Also, the study explores how the supply of essential medicines enhances the achievements of 21st-century health needs in Africa. In other words, as argued by Azevedo (2017), this study concentrated on the five elements: the creation of the Africa Center for Disease Control and Prevention (Africa CDC), state governance, healthcare financing, and the availability of sufficient supplies of high-quality, safe, and effective medicines. Because the six components of health systems—sustainable funding, health workforce, leadership and governance, service delivery, medications and vaccines, and information—are related to the issues that African countries' health systems face.

It is clear that the governance and leadership component assess the national institutional framework for multi-sectoral management, the national program components for managing the health sector, and the legal framework for the health sector and national management. At the same time, Sustainable finance comprises sub-national and national approaches to health sector management financing. To emphasize this, Azevedo (2017) insisted that systems for disaster preparedness, risk-reduction tactics, and risk communication are all examples of information. Regarding the EMS system and mass casualty management, response capacity, access to essential health programs and services, hospital administration during crises that cause mass casualties, and logistics and operational support tasks are incorporated into service delivery. To support the theories of this study, distribution, governance, quality, and financing theories are used.

The conclusion and research findings of this study aim to help determine how much AU has attained concerning the promotion of Health among African nations and identify areas that require more attention. The study will also reveal how the performance of the AU in the field of Health has been impacted by the governance of African leaders. The results of this study will also be used to provide ideas for improving how the AU carries out its mandate to ensure that African countries have the fundamental building blocks for sustainable health systems. Finally, this study will be the foundation for future investigations of the AU and its role in Africa.

After closely examining the effective method to carry out our study, a qualitative research method was adopted to gather data for this study. The selection of this method was backed by the facts and statistical findings, which show that it is more naturalistic, emergent, interpretive, and an interpretive method applied to study social sciences and human experiences compared to others (Aspers & Corte (2019). The study also adopted a qualitative research approach, allowing researchers to collect data from different sources (Ridder, 2017). As a result, the researcher can produce thorough research findings. The researcher used secondary qualitative data for this study. The use of descriptive research design was employed in this Research because it allowed the investigators to analyze and summarize materials from pre-existing sources. Descriptive research design aims to allow the investigator to produce emerging ideas about an issue being studied by analyzing and summarizing data from existing sources.

The researcher purposively chose 20 countries to include in the study. Countries from the five African regions, including Central Africa (3), West Africa (5), East Africa (5), North Africa (3), and Southern African (4), were included in the study. The countries chosen were those severely affected by HIV/AIDS, malaria, pneumonia, and tuberculosis. Countries from Eastern Africa were

Tanzania, and Kenya, while those from West Africa were Ghana, Burkina Faso, Côte d'Ivoire (Ivory Coast), Senegal, and Nigeria. Countries chosen from Northern Africa were Morocco, Sudan, and Egypt, while those from Southern Africa were Swaziland, Namibia, Botswana, Zimbabwe, Zambia, Mozambique, and South Africa. Equatorial Guinea, DRC, and Cameroon were chosen from the Central region. Sources of data were obtained from trustworthy databases.

This chapter presents the implications, recommendations, and conclusions drawn from the study findings. The chapter is divided into four sections, with the first section outlining the implications of the study. This section is guided by the five research questions. In the implication section, logical conclusions are drawn from the findings of every research question. The implications of the study are presented in relation to the research problem, the purpose of the study, the significance of the study, and the theories guiding the study. The second section presents the recommendations for applications. This section discusses how the findings of the study can be applied to real-life situations. Further, the research gaps for future research are presented. Lastly, conclusions drawn from the entire study are presented.

5.1. Implications

Based on the findings, the implemented health financing policies should seek to cover medical care costs for low-income families. Low-income families face increased barriers to accessing healthcare services compared to high-income earners. One of the reasons why poor households face barriers to healthcare access is the lack of affordability. Most low-income families are less likely to have health insurance.

African countries' governments should consider establishing a single risk pool for the employed population. The government should also create a Special Fund to meet the needs of the

underserved who cannot afford expert care, either locally or overseas. African countries adopted numerous economic and social measures to mitigate the effects of a health crisis. Adopting the measures entails the implementation of fundamental health system reforms that increase the health care budgets. Once the budget of the healthcare sector is increased, the healthcare system will automatically upgrade, thereby adequate preparation for the crisis as a mechanism for meeting 21st-century healthcare needs. The healthcare commitments in Swaziland are in such a way that it may result in a fiscal deficit that is more likely to increase, leading to difficulties in financing healthcare needs (World Health Organization, 2019). As such, the government of Swaziland should implement tax reforms during and after the pandemic to enhance effective medical service delivery by adjusting the healthcare expenditure for the promotion of medical research, manufacture and importation of drugs, and hiring healthcare service providers.

The implication of the results of the second research question is that if the Africa CDC facilitates the center's strategic goal of quick and effective detection, surveillance, and response, strengthens the capability and capacity of public health institutions, and strengthens partnerships to spot and retort quickly and efficiently to threats and outbreaks of diseases, and this will assist in attaining the 21st-century health needs in these nations. Africa CDC assists African countries in dealing with a pandemic and safeguarding the healthcare sector. The study's findings imply that African governments should ensure that the Africa CDC is primarily responsible for enhancing public health in the entire African continent through medical research, financing of drug delivery, and innovation in medicine. As an organ working under the African Union, Africa CDC should play a normative role in coordinating the capacity building in providing early warning to pandemics, preparedness, and response to infections. It should also enhance the mapping of

hazards, risks, and emergencies, partnership promotion, and collaboration with global disease prevention and control (Michaud & Isbell, 2023). Through the Africa CDC, African nations should enhance regional collaboration by representing central, Eastern, Western, Southern, and Northern Africa (Michaud & Isbell, 2023). African state's Ministry of Health should ensure that the founding statutes of the Africa CDC are followed to enhance the collaboration with the World Health Organization as a mechanism of avoiding role overlap.

The African Union, through the Africa CDC, should actively implement the statutes during the organization's formation by helping the member states respond effectively to healthcare challenges. Response entails the declaration of public health emergencies of international concerns to promote disease prevention by strengthening the health systems. It also addresses the issues with communicable and non-communicable diseases, neglected tropical diseases, and environmental health (Michaud & Isbell, 2023). The move will continue to harmonize the member states' disease control and prevention policies, plus their surveillance system. Through capacity building, the African state governments should increase laboratory training programs and epidemiological training to promote innovation in disease control and prevention.

Through the AU member states, Africa CDC should tackle the spread of misinformation by providing educational materials and broadcasting campaigns that directly affect the communities. Through public sensitization using varied mediums, Africa CDC has managed to minimize the socioeconomic impact of pandemics on African communities by creating equitable access to vaccines as a significant priority in enhancing healthcare needs (Michaud & Isbell, 2023). Furthermore, African nations should use the Africa CDC to build partnerships with other nations

and international organizations on disease prevention and the climate change program brought about by the environmental crisis.

Moreover, the governments in the African States should develop a reliable mechanism of supplying productive, safe, and quality to enable the countries to achieve 21st-century healthcare needs. The effective supply of medicine will enable healthcare providers to receive the equipment and medicines without delay, as evident in the study findings by Nkengasong & Tessema (2020). Also, the finding reveals that the supply of this medical equipment will allow both public and private healthcare providers to obtain necessary products for healthcare service delivery. As such, African governments should implement an effective medical supply chain to enable the hospital to acquire medical equipment for sustainable service delivery to the community. As a framework for enhancing the effective supply of medical equipment, the African governments should implement tax waivers on medical equipment to make the overall cost of importation go down, hence easy access to more advanced medical equipment (Johnson, 2017). Waiving the tax will reduce the prices of medical commodities and equipment and hence will allow the private sector healthcare facilities to purchase new equipment like x-ray facilities, CT scans, and other cancer screening devices.

Notably, the research questions provide a mechanism through which the supply of medical equipment and medicine can be improved to achieve sustainable development. Upon the implementation of the approaches to safe, efficacious, and quality medicine, the 21st-century health needs in Africa will be fulfilled. The finding also adds to the scope of the literature review. The literature review in chapter two is also a reflection of the findings on the implementation of the ways of accessing effective, efficacious, and quality medicines, hence showing the expectations

and the relationship. The finding has an implication to the applied degree through uncovering the need to provide safe, efficacious, and quality medicine to African healthcare institutions to mitigate the healthcare challenges facing the healthcare system. The findings of the study of research question three build on the existing body of research by creating a comprehensive view of the management of the healthcare challenges and the role of the African government in providing effective healthcare through the provision and the supply of medical instruments.

The research question on the access to safe, productive, and quality medicine on the 21st-century health needs in Africa provides an increasing demand on what African countries should do to achieve sustainable development goals in healthcare provisions. African countries should develop an integrated medical supply chain system involving the public, private, commercial sectors, and non-government organizations to promote the supply of quality, safe, and productive medicine. The practical approach is through the primary distributor model, in which the government contracts private companies to operate the pharmaceutical supply chain (Darouich & Dhiba, 2020). Through the use of the primary distributor, it is the responsibility of the governments to provide the contractual oversight that controls the process of supplying quality medicine. Another approach is the provision of the non-governmental system and the private sectors the opportunities to import medicines from fellow African countries after the standardization of the drugs.

African nations should invest in herbal medical research to promote access to quality, safe, and productive medicine. The research in herbs will promote the use of knowledge generated from higher-learning medical institutions to justify their need for involvement in drug production. About 80% of the population in Africa relies on herbal medicine, and more than 30% of manufactured

drugs globally rely on herbs. The African governments must promote the commercial exploitation of herbal drugs through research and innovations to make quality drugs accessible to citizens. Through the Center for Plant Medicine Research, established in 2010 in Ghana, the government of African countries has facilitated medical innovations (Kim, 2022). The innovations are reached by scientific research and development in plant medicine. Therefore, preserving the local African culture and sharing the knowledge in the field of plant medicine with the world encourages the intense move of Africa to manufacture their drug and appreciate the role of culture in disease and infection control. As such, struggling to protect the patients' persistence is advocated through growing research and innovation. The move to enhance access to quality medicine is achieved through the changes in the medical regulatory landscape, which is changing in most African countries. Examples of these countries are Ghana and Ivory Coast, where the National Medical and Regulation Association operates under the influence of the World Health Organization to reduce the circulation of counterfeit and fake medicine. The approach enables innocent patients to receive quality medicines from government institutions and privately owned medical service vendors. Meeting the 21st-century healthcare needs in Africa requires the African governments to control the price of medicines by forming agencies. The agencies will provide a forum through which cheap and ineffective medicine is not imported or supplied into the countries (Kim, 2022). The government of African countries that manufactures drugs and essential medicine, like Morocco and the Ivory Coast, should strengthen their manufacturing sectors and capacities through training, research, inventions, and innovation, plus collaboration with the international communities. The collaboration will create a systematic approach through which the companies

can use the strategies used by other overseas companies to produce or manufacture medicines for increased medical provision.

Improving health education in tertiary institutions is a mechanism through which the government of African countries should consider increasing the medical personnel within the nations. The institutions should offer comprehensive training in pharmacy, surgery, nursing, health records, dentistry, and other health-related services. The increased provision of these healthcare skills will enable the countries to increase their self-reliance on the service providers, hence providing access to quality medicine through the professional diagnosis and testing of the patients. Besides increasing the medical training institutions, there should be specialized practical training in medical manufacturing (Nakambale & Bangalee, 2022).

Also, regarding the supply of essential medicine for 21st-century health needs in Africa solves the problem of the study, which is the challenges affecting the healthcare system in Africa, the African continent should make the essential medicines available for managing malaria, pneumonia, tuberculosis, and diarrhea available in Africa. Malaria, pneumonia, tuberculosis, and diarrhea are chronic health illness that needs to be addressed urgently by the African governments because they cause high mortality and early death. Roder-DeWan, (2020) continues to depict that the government of African countries should make the essential medicines for managing chronic infections available to minimize morbidity and mortality rates. The move is achieved by the policymakers who craft the policies to mitigate the challenges faced by the African citizen, like the increasing infections caused by tuberculosis, diarrhea, and malaria. As such, sustainable policies should be crafted by policymakers in African countries to ensure that essential medicines are readily available to combat chronic infections.

The governments of African countries should continue to empower the regulatory bodies to ensure that the essential medicines are used appropriately and adhere to the manufacturers' standards and scientific approval. According to the findings of the fourth research question, the government of African countries should make essential medicine available to the healthcare systems in an assured quality with sufficient information. Making essential medicine available in assured quality with information can be achieved by the government by legalizing the production of medicines to bridge the gap created by the insufficient supply of essential medicine. Consequently, through sponsorship by the African governments, the researchers should determine the quality of the drugs supplied to healthcare institutions to eradicate the challenge of supplying counterfeit drugs. Another mechanism through which the government should make essential medicine of assured quality is eradicating improper quality drugs by subjecting all the drugs to quality control tests. The quality control test will determine the drug's effectiveness in the proper dosage and provide the standardization mark that allows its usage by hospitals and healthcare professionals. To mitigate the possibility of the provision of improper dosage, the government of African countries should implement policies that criminalize the provision of medicine of improper dosage and uncertified quality (Chattu et al., 2021). Concerning the need to solve the challenge of the provision and supply of essential medicine on improper quality and dosage, the African state government should combat the vice by employing more qualified personnel in the drug assessment sectors in the district or areas of administration hence curbing the possibility of using the unproven or counterfeit drugs that may endanger the society. Most importantly, the government should work closely with the Centers for Disease Control to eradicate the falsified use of the drugs like anti-malarial drugs and sensitize the public and healthcare providers on the

possible approaches, conditions, and recommendations that should be considered before purchasing the drugs.

Significantly, the fourth research question directly responds to the problem of the study, which depicts the increasing challenges facing the healthcare system in Africa. The challenges include inadequate essential medicine for managing chronic infections like malaria, measles, tuberculosis, diarrhea, and cholera, availability of essential medicine in improper dosage form, and essential medicine of poor quality with insufficient information (Chattu et al., 2021). This research question provides amicable ways to improve the availability of essential medicine in African nations. If the ways of making essential medicine available in proper dosage and of assured qualities are implemented, African nations will swiftly achieve the 21st-century healthcare needs in Africa (Mandoko et al., 2018). Notably, the study findings of the fourth research question add to the content and the scope of the literature review because of the provision of a new dimension concerning the provision of essential medicine. As such, the findings of the fourth research question were expected due to demonstrating the relationship with the literature review covered in Chapter 2. Through the relationship with the existing literature review covered in chapter two, the findings of the fourth research question four build the applied degree and the existing body of research to the doctoral degree by identifying the challenges in healthcare service delivery and the measures to mitigate the challenges as an initiative of the government, healthcare professionals and the healthcare organizations.

The fourth research question explaining the role of the African state governance in 21st-century health needs in Africa describes seven approaches through which the African government should enhance healthcare needs. The approaches mitigate the challenges describing the 21st-

century healthcare needs in Africa. One of the approaches is that the government should enhance transparency in handling healthcare matters. Enhancing transparency involves sealing the corruption loopholes that were advantaging some individuals within the government for selfish gain. Also, the government should ensure justice in all the healthcare sectors by creating a system of equality where healthcare is accessible to all regardless of socioeconomic and political status. Equality is achieved by the introduction of Universal health coverage (UHC) and the use of the affordable health coverage to mitigate the financial constraints. The second finding depicts that the government should promote coalition building in healthcare delivery. According to Adebisi & Prisno (2021), coalition building is based on a healthcare team providing education, healthcare services, and outreach programs. Also, the government should achieve coalition-building through strategic alliance policies where the two nations are allies for healthcare provision. An example of the alliance is the pact between the United States and the African governments to provide medical aid to achieve the shared goal of improving healthcare outcomes. Alliance with the developed nation will be a framework through which the ideas are compared with the aim of enhancing sustainable development goals in healthcare.

The fourth research question on the need for African countries to supply essential medicine indicates that several African states still need to catch up in providing essential medicine for their citizens. Swaziland, Namibia, and Zimbabwe lack a sufficient supply of essential medicine to manage tropical infections and the rising pandemics. As such, African countries should work with international organizations to find a strategic model for delivering medicines that aid in fighting infections like Tuberculosis, AIDS, and malaria. Morocco has been active in making essential medicine available through the aid of the Global Funds, but the challenge arose when the

organization concluded leaving the country (Kim, 2022). Mitigating the challenge involves working together with other global organizations that could fund medical research and innovations. Also, the Moroccan government should prepare effectively for the transition of quitting financial provisions from global funds by implementing the inter-ministerial dialogue to manage infections.

Promoting essential medicine supply requires accountability to manage infections like Malaria, Tuberculosis, and HIV/AIDS. Lack of accountability made Equatorial Guinea lag in the medical provision due to the increasing rates of corruption within the government, especially in the Ministry of Health. The African government should implement a framework for enhancing accountability in procuring medical equipment and drugs. Accountability also leads to the increment of the medical workforce because of the achievement of medical grievances (Adebisi et al., 2021b). Many African states should move away from the traditional management of medical services characterized by a lack of accountability in the case of Equatorial Guinea. Creating accountability will provide a comprehensive approach to medical supply and equipment delivery, effectively enhancing Africa's healthcare provision.

Faith-based organizations, private sectors, and non-profit organizations are well known for providing an adequate supply of essential medicine in African countries. Including them in the tender procurement and the supply of drugs and medical items will bridge the gap between the ineffective and inefficient supply of drugs to nations like the Ivory Coast, Zimbabwe, and Zambia. Notably, these organizations handle almost 20% of the pharmaceutical market. As such, policymakers and health officials should frame the financing policies that regulate the responsibilities of the public and the private sectors in line with the supply of essential medicine (Adebisi et al., 2021b). The process involves forging the public-private sector relationships that

promote the supply of essential medicine for the management of infections like malaria, HIV/AIDS, tuberculosis, and measles.

Most African countries rely on the kiosk for the supply of essential medicines. The kiosks are easily reachable by most clients and customers infected by the infections. However, the customers have received inappropriate medicine with poor quality or drugs given due to poor diagnosis. As such, the African government should increase the training of the medical staff with the dispensing and business skills to promote the supply and dispensing of essential medicine (Adebisi et al., 2021b). In Ghana, the government has resolved to regularly inspect the shops and promote the reliable supply of essential medicines to shops through the innovation of public-private franchising and accreditation. Considerably, more efforts should be implemented by the African governments to maintain the dispensing practices to contribute to the increasing healthcare provision.

Through economies of scale, the African governments should buy medicines of assured quality through the involvement of national experts in procuring drugs with greater collaboration with the neighboring nations. The process is called the regional partnership. The regional partnership involves sharing the medical information on the supply and the pricing through the establishment of formal grouping purchase schemes.

Based on the Health Systems Dynamics Theory, African countries should implement and enhance adaptive governance structures within health systems in African Union member states. These structures should be flexible, responsive, and capable of adjusting strategies based on emerging health trends and global developments. Regular evaluations and adjustments should be made to ensure ongoing effectiveness**.** Also, African countries need to foster the seamless

integration of various components within health systems, including governance structures, financial mechanisms, and health intervention strategies. This holistic approach ensures a coordinated and effective health system that addresses the interconnected challenges faced by African nations.

5.2. Recommendations for Application

African nations such as Nigeria with poorly implemented health financing policies should consider implementing policies such as those implemented by the countries that are doing well in ensuring that low-income families access quality healthcare services. African countries should implement health financing policies that stress the need to spend wisely on cost-effective and high-impact services that are crucial to attaining health-related SDGs and national goals. The implementation of well-designed health financing policies will ensure that economically disadvantaged populations get access to the required healthcare services of sufficient quality.

Secondly, from the results, it can be recommended that African nations should implement efficient money transfer systems in healthcare systems.

Also, it is recommended that African nations should create avenues of health financing to raise revenue for healthcare facilities. Findings showed that health finance, which helps with pooling money, creating revenues for healthcare institutions, and buying healthcare services, contributes to meeting the health demands of the 21st century. The literature reviewed in Chapter 2 showed that the main reason why African nations' healthcare systems lag behind is due to a lack of sufficient funds. For instance, Ezenwakae et al. (2022) found that the federal government in Nigeria spends just 16% of all healthcare dollars or 0.5% of GDP. Nathaniel and Khan (2020) also identified a correlation between healthcare funding and quality of life in Nigeria. From the

literature reviewed in Chapter 2, it was also established that there is a statistically significant relationship between health financing and health outcome in African nations (Akinci et al., 2014; Akinci et al., 2014; Rana et al., 2018; Shabnun et al., 2021; Weibo & Yimer, 2019). Some of the ways through which African nations can raise revenue for healthcare institutions include government funding, social health insurance, private health insurance, user contributions, and donor funds. African nations should strive to minimize out-of-pocket payments for healthcare services. Out-of-pocket costs include all the charges for non-covered treatments, as well as coinsurance, deductibles, and copayments. The literature reviewed in Chapter 2 reveals that about 90% of people throughout the world pay for their medications out of their own pockets, which may be a financial burden when they have to choose between buying medicine and eating or paying rent (UN, 2021).

Another recommendation is that African countries should support the Africa CDC agenda to attain 21st-century health needs. Findings revealed that the Africa CDC contributes to attaining 21st-century health needs in Africa through faster and more efficient detection, surveillance, and responses. Findings showed that although the Africa CDC has allowed for the collection, analysis, and administration of healthcare data for the formulation of healthcare activities, hence facilitating the center's strategic objective of rapid identification, monitoring, and reaction to health crises in most African nations, this is not always the case. For instance, although the Africa CDC in Nigeria has received funding for COVID-19 monitoring, detection, and response according to the study of Oloruntoba (2021), the attempt of the Africa CDC to develop a comprehensive response to the rising incidence of COVID-19 in 2020 and 2021 was hampered by the presence of porous borders in the West African country. Thus, African countries should support Africa CDC in such countries.

African nations should also support the Africa CDC because the union helps strengthen public health institutions' capacity and capability. Findings showed that with medical research and innovation, the Centers for Disease Control and the World Health Organization established public health institutions to control the spread of influenza (Breiman et al., 2007). Like many others in Sub-Saharan Africa, public health institutions in Tanzania have challenges in providing quality treatment due to a lack of funding and trained personnel. According to Wilson et al. (2021), public health facilities will be better equipped to deal with infectious diseases due to the new field epistemological training program and intermediate course development financed by the Africa CDC and the government. African nations should create systematic approaches and plans by sensitizing the public on the disease prevention and response mechanism. According to the study findings, the government of Botswana plans to implement the SDG, UHC, and IHR initiatives, all of which include integrating the health information system to better the health care system. Including the hospital-IT system in the SDGs is a major priority. In conjunction with other medical groups, the Centers for Disease Control and Prevention (Africa CDC) has prompted the Ministry of Health to adopt the Health Information Exchange (Mamuye et al., 2022). The implementation of the Africa CDC will accelerate the African nations' move to enhance a healthy life by conducting a collaborative effort that responds to the global risk of the human-ecosystem-animal interface.

African countries should ensure a sufficient supply of medical equipment in healthcare institutions. Findings established that a sufficient supply of medical equipment contributes to improved health and attaining 21st-century health needs in Africa by creating a mechanism for providing effective healthcare services. Some of the well-doing African nations in terms of health

have their healthcare facilities and organizations collaborating with the manufacturers of medical equipment for an effective supply of medical equipment, hence creating conditions through which the provision of quality healthcare services is promoted. According to Hunter (2014), the efficient supply of medical equipment has expedited access to safe and quality medical treatments, hence creating a system for effectively delivering healthcare services to the people in South Africa.

Another recommendation is that African nations should also ensure a sufficient supply of medicines in healthcare facilities. Study findings revealed that the provision of quality healthcare services in Africa lags because of the inefficient supply of medicines. Due to corruption, the bureaucratic system of African nations has made drugs costly and unavailable to healthcare facilities. Due to the increasing surge in infections in African countries, nations like Nigeria, Kenya, Senegal, South Africa, Sudan, and Egypt have realized the need to combat the bureaucratic medicine supplies that benefit individuals instead of helping public health institutions to fight the vice of diseases. The initiative is based on the promotion of a sufficient supply of medicine in developing nations. African nations can promote a sufficient supply of medicine by promoting local production of medicines. The Senegalese government, as shown by Ndao and Diarra (2018), has taken the initiative to promote local manufacture of medication in an effort to reduce the cost of importing medicines from France. The initiative is currently implemented by constructing the pharmaceutical companies, which is noted in Dakar, the capital city. Manufacturing pharmaceuticals in Senegal will facilitate better patient care by increasing the availability of medical supplies and infrastructure. Other African nations should implement this initiative. Also, African nations should reduce taxes on imported drugs to promote the supply of efficient medicines. One of the countries that has so far adopted this strategy is Morocco. To ensure that

hospitals have a steady supply of needed medications, the Moroccan government has lowered import taxes. As a result, most private and public hospitals are now able to afford quality medicines. Also, the Swaziland government has made it possible for the increased importation of Medicine from neighboring countries like South Africa and Angola to promote the availability of essential services in hospitals. This has been achieved by reducing taxes on imported drugs. African nations must ensure that they have well-developed methods for monitoring medicine shortage in the country so as to determine the mechanism of effective supply to the nation.

Furthermore, African countries should promote access to new and quality medical instruments. African nations can implement e-health infrastructures that promote the supply of medical instruments through electronic orders to do so. Upon the implementation of e-health, African nations can accelerate access to medical instruments from suppliers in emergencies. Also, African nations should ensure faster access to new, quality medical instruments. Findings revealed that access to new and quality medical instruments improves healthcare delivery and contributes to the attainment of 21st-century health needs in Africa. For instance, the study findings revealed that the availability of safe, effective, and high-quality medication partially met the healthcare demands of the 21st century in Cameroon. When the COVID-19 pandemic first broke out, medical workers required PPE to do their jobs and protect themselves while treating the afflicted populace (Bibaa, 2020). Cameroon also received the new medical equipment just in time to combat the Ebola pandemic, a concern in several African nations. Increasing procurement money and enlisting the help of the World Health Organization and the Centers for Disease Control and Prevention were part of Cameron's approach to gaining quick access to innovative medical tools and pharmaceuticals (Bibaa, 2020).

In addition, African countries should ensure a sufficient supply of essential medicines for treating tuberculosis, malaria, diarrhea, pneumonia, and tuberculosis. The literature reviewed in Chapter 2 revealed that 50% of children below the age of five years die of tuberculosis, measles, malaria, pneumonia, and diarrhea (Pheage, 2017). Also, the literature reviewed on disease burden in Africa revealed that Malaria, TB, HIV/AIDS, and associated consequences were responsible for nearly 1.6 million fatalities in Africa in 2015. (UN, 2017). Almost 75% of AIDS fatalities and 90% of malaria deaths occur in Africa today (Sillo et al., 2020). African countries also account for half of the world's mortality from pneumonia and diarrhea among children. Since then, Africa has taken on the mantle of carrying the world's worst disease. This is true even though these illnesses have effective preventative and therapeutic measures (UN, 2017). This study also showed that preventable diseases such as measles, diarrhea, tuberculosis, malaria, and pneumonia are the leading causes of death in African countries (Cillóniz et al., 2020; Woldeyohanins et al., 2021). These statistics show a high disease burden in Africa, and African nations need to get a supply of essential medicines for treating these diseases.

African countries should implement the International Health Regulations as a mechanism for enhancing their capabilities and capacity, preparing them for a strategy of responding to public health events that harm healthcare security. The International Health Regulations are a set of rules that African countries should adopt purposefully to strengthen their core capabilities, hence the accessible provision of adequate funding and partner collaboration. According to the third research question on the access to safe, quality, and productive medicine as an African initiative of achieving 21st-century health needs, the implementation of the International Health Regulations provides an approach through which the safety of healthcare is reached by the African nation and

the African Union in general. Also, the second research question on the role of the Africa CDC in the facilitation of the center's strategies for effective detection, surveillance, and response to infection comments on the need for the African country to implement and adjust to the International Health Regulations because the Africa CDC was formed to aids in the international surveillance of the health to help the African nations to adjust to the 21s century health care needs (Michaud & Isbell, 2023). Also, the Africa CDC should purposefully work with other international health organizations through support from the African Union. An example of an international organization that has profoundly worked with the Africa CDC is the European Union and the World Health Organization.

Consequently, the African government should improve disease surveillance through health promotion and collaborations among the key sectors (Nakambale & Bangalee, 2022). The need to improve disease surveillance is based on the existence of non-infectious and infectious diseases. Notably, creating a systematic approach to respond to diseases should be met through working with the agencies to strengthen the healthcare system, effectively responding to public health emergencies. In addition to disease surveillance, the African Medicine Agency should establish different pharmaceutical companies to increase the effectiveness of the disease response and surveillance against infections. The companies will increase the local supply of essential medicine for the management of infections at an affordable cost to the consumers with the regulations from the national bodies mandated with the responsibilities of enhancing the safe supply of medicine.

Manufacturing practices should be promoted in Africa to promote increased production of medicine and employment opportunities that improve the standard of living. Improving the standard of living reduces the possibility of diseases like diarrhea and cholera. As depicted by the

explanation from the fourth research question on the supply of essential medicine in Africa as a mechanism of achieving 21st-century health needs, African nations should intensify the research in herbal medicine. Herbal medicine forms an essential aspect of the African lifestyle; hence, treating diseases and infections based on the findings from the research could promote the African culture in a scientific dimension (Azevedo, 2017). The Moroccan government started producing essential medicine from the research generated from the herbs. However, the intensity of production has yet to be improved to promote the surplus production of essential medicine, leading to increasing reliance on imported medicine to treat infections. On that notion, the Moroccan government should implement extensive research and innovation in the industrial, production, and medical research to mitigate the challenge of over-relying on overseas drugs to treat infections. Direct investments through the support of manufacturing through capacity building, improved access to building infrastructure, and invention and innovation will enable Africa to tackle the challenge of the medical supply comprehensively.

Poor and vulnerable African countries need support from their abled counterparts and the African Union in response to climate change and the fight against emerging and existing infections. African countries like Swaziland and Equatorial Guinea are characterized by low Gross Domestic Product as most of its population are deemed poor enough to afford the cost of medication. Therefore, they require support to implement the national action plan that focuses on the health of humans and livestock for increased sustainability in the healthcare provision (Odeku & Ola, 2021). The support should be granted through evidence-based strategies, setting the target on the medical service provision and developing the regulatory framework and the professional capabilities to support the responsible procurement and use of the essential drugs, majorly anti-microbial.

African nations need a new public health order to tackle infectious disease threats. The public health order may be responsible for adopting African countries to cope with 21st-century health threats. The new order requires strengthening from the national public health institutions, the continental organization, manufacturing sectors, local and international medicinal entrepreneurs, and the entire public health workforce. The African countries started the need to acquire the new public health order by detecting Africa's aspiration to achieve the vision 2063 developmental blueprint. Besides managing the disease, African nations should balance their developmental aspirations to strengthen the health system, which they will use in fighting the synergistic concurrent epidemics. Africa is characterized by rapid population growth resulting in easy movement, widespread infections like malaria, HIV, and TB, and the threat posed by ecological, environmental, and climate changes; hence, the need to use strategic approaches to arrive at a comprehensive solution majorly through the use of the new public health order (Adebisi et al., 2022). Furthermore, African nations should strengthen their health insurance by increasing the budgetary allocations. The move will enhance universal health coverage in all regions, as depicted by the countries that have implemented the move, like Ivory Coast and Zambia. Investing in the medical supply chain will continue to help Africa promote an adequate supply of essential medicine to fight against emerging infections by employing technological innovations.

African countries should also ensure essential medicines in healthcare systems are available in proper dosage forms. Essential medicines are types of medicines that address the most pressing medical requirements of a community (Kar et al., 2010). Essential medications are selected based on their demonstrated safety and efficacy, importance to public health, and cost-effectiveness, as stated by the authors. According to the study findings, even though there may not

always be enough of these "essential" drugs available, they should be readily accessible in the appropriate dose forms, with quality assurances and enough background information. Also, the study findings revealed that the availability of essential medicines in the correct dosage forms assists in achieving basic health needs. Specifically, the findings revealed that proper dosage of essential medicine aims to control morbidity and mortality in African countries. For instance, the findings revealed that essential medicine enables Nigerian citizens to obtain affordable healthcare (Hassan et al., 2018). According to the author, the utilization of essential medicine for treating the increasing infections in Nigeria has created a framework through which Nigeria could easily fight infections at affordable prices. This has assisted in solving the healthcare needs in Africa.

Moreover, African nations should ensure essential medicines are available in healthcare systems with assured quality and sufficient information. In addition, African countries should ensure transparency in handling health matters. Findings revealed that one way through which state governance contributes to achieving 21st-century health needs is by ensuring transparency in dealing with health matters. Countries such as Senegal are fighting against corruption in the healthcare system. For instance, the Senegalese government has established the National Anti-Corruption and Fraud Office (OFNAC) to fight against corruption (The World Bank, 2014). Also, findings revealed that the need for more transparency in the Kenyan healthcare system has led to a lack of implementation of the pilot program for running UGC, which was introduced in Kisumu City.

Additionally, African countries should promote coalition building within healthcare delivery. Findings revealed that long distances between healthcare systems and people residents in some African nations, such as Senegal, have limited access to healthcare services (Cothran,

2019). Forming a coalition in healthcare delivery would assist healthcare providers in reaching all regions, enhancing the availability of healthcare services to all people. Also, findings revealed that the coalition between the US and Egypt has led to improved health outcomes in Egypt. Additionally, findings revealed that the Tanzania government promotes coalition building in healthcare delivery by involving community members in the healthcare systems. According to Renggli et al. (2019), Health Facilities Governing Committees (HFGCs), comprising local residents, manage individual healthcare facilities. They must coordinate with the CHSB and raise funds to keep the hospital operational. This shows a need for African nations that have not begun coalition building in healthcare delivery to do so.

In relation to the developed Health Systems Dynamics Theory, African countries should encourage collaborative efforts among stakeholders in the health sector, including governments, international organizations, and local communities. Collaboration should extend to data sharing, resource allocation, and joint initiatives to tackle health challenges collectively. The AU should also prioritize data-driven decision-making processes within health systems. Invest in robust data collection, analysis, and utilization mechanisms to inform policies, interventions, and resource allocation. Regular monitoring and evaluation should be conducted to assess the impact of health initiatives.

The study contributes to the existing body of knowledge by generating contextually relevant insights that can enrich our understanding of the complex dynamics at play within the African health landscape. Specifically, the study distinguishes itself through its interdisciplinary methodology, incorporating perspectives from public health, political science, and international

relations. This inclusive approach enables a comprehensive understanding of the complex interplay between governance, healthcare, and the broader socio-political landscape in Africa.

5.3. Recommendations for Future Research

1. The findings reveal several gaps in understanding the challenges affecting healthcare in Africa. To comprehensively address these challenges, future research should focus on bridging the knowledge gap and explicitly exploring how well-designed health financing policies can mitigate the 21st-century health challenges in Africa
2. Future research should delve into the root causes of these challenges using a systematic approach to identify and address challenges faced by countries across West Africa, East Africa, Central Africa, South Africa, and North Africa.
3. Future studies should develop more robust methodologies to identify financial challenges in African states and devise appropriate mechanisms to address them. Economic analysis and an explorative approach integrating research teams could enhance understanding of the impact of well-designed health financing policies, particularly in the context of Universal Health Coverage in Kenya, Cameroon, and South Africa, as well as the Community Health Fund.
4. There is a pressing need to improve both the quantity and quality of evidence regarding efficient money transfer systems in healthcare facilities, particularly in African contexts. While existing research provides valuable insights, future studies should employ grounded theory approaches and quantitative measurements, moving beyond qualitative literature reviews.

5. Future studies should focus cost-benefit analyses of healthcare funding strategies, albeit methodologically challenging, to provide insights into the long-term implications of health financing decisions, including the use of insurance and out-of-pocket payments.
6. Future research should explore the effects of different financing strategies on public health outcomes, considering factors such as equity, efficiency, and sustainability.
7. Future research should assess how African nations have utilized the Africa CDC's resources to address healthcare challenges, particularly regarding disease surveillance and response systems. Case studies and qualitative approaches can provide comprehensive insights into the effectiveness of CDC interventions and their impact on healthcare outcomes.
8. Future research should examine the governance mechanisms and coalition-building efforts that contribute to achieving 21st-century health needs in African countries. Empirical studies are needed to assess the effectiveness of transparency and accountability measures in healthcare governance, as well as the impact of coalition-building initiatives on healthcare delivery.

5.4. Conclusions

The primary goal of this study was to explore the AU's contribution toward attaining 21st-century health needs in Africa. To achieve this goal, the study was guided by five specific objectives. The first objective was to examine the contribution of health financing toward the attainment of 21st-century health needs in Africa. The second objective was to determine how Africa CDC contributes to achieving 21st-century health needs in Africa. The third goal of the study was to define how access to quality, safe, and efficacious medicine contributes towards 21st

century health needs among African nations. The fourth objective was to explore how the supply of essential medicines contributes to achieving 21st-century health needs in Africa. The fifth objective was to determine the contribution of state governance toward African countries' achievement of 21st-century health needs.

The study adopted a qualitative research method to address the five research objectives. This research approach was ideal for this study because it allowed the researcher to gather data from multiple data sources, thus presenting detailed data to address the research questions (Ridder, 2017). Secondly, this approach was ideal for this study because it is interpretative, naturalistic, and emergent (Aspers & Corte, 2019). The study employed a grounded theory design, which allowed the researcher to summarize the existing findings about AU's contribution toward attaining 21st-century health needs and come up with the Health Systems Dynamics Theory. The researcher selected 20 African nations to be included in the studies and adopted a multiple-state purposive sampling technique to select these countries because it saves much time. Countries were purposively chosen from each of the African regions. Countries adversely affected by malaria, tuberculosis, pneumonia, and HIV/AIDS were chosen.

This study used twenty (20) countries out of 55 which were carefully selected as the sample frame. Even though the study did not include human participants, the researcher upheld several ethical considerations to ensure credible data was used for this study. Firstly, the researcher ensured that the data collected was adequate and relevant in communicating the study's research questions. Secondly, the researcher ensured that previously conducted research that was reviewed was reliable and relevant to meet study goals and objectives. Also, the researcher acknowledged all other applicable information from other studies of other researchers to maintain the study's

quality and originality of the study. This was achieved by ensuring that the original authors of each study reviewed were cited appropriately. Data sources were retrieved from reputable databases, including Google Scholar, EBSCOHost, ProQuest, Sage Publications, and Emerald. The researcher developed the search terms and the inclusion and exclusion criteria to aid in retrieving relevant and credible data to address the research questions. After data was collected, it was analyzed using thematic data analysis. Braun and Clarke's six-step qualitative data analysis was employed. The first research question examined how health financing contributes to the attainment of Africa's 21st Century Health Needs. The findings showed that numerous initiatives in health financing in Africa have contributed to effectively meeting the health demands of the 21st century. The first initiative is to implement well-designed health financing policies, such as spending money wisely and buying healthcare supplies most cost-effectively. Spending intelligently on cost-effective and high-impact services is critical to achieving health-related Sustainable Development Goals (SDGs) and national targets, as stated by Ezenwaka et al. (2022). Usually, sustainable development goals are met when every citizen in the country has access to health care. One country that has been able to implement Universal Health Coverage to improve financial services and healthcare policies is Senegal (Bames et al., 2016). Findings further revealed that Sudan has been able to get rid of the bad medical funding practices owing to the new policies for managing healthcare. Furthermore, with the help of the National Hospital Health Insurance Funds (NHIF), Kenya is putting into place UHC to improve health outcomes in the nation. Also, the Democratic Republic of the Congo and the Republic of Cameroon have instituted sustainable healthcare policies to eradicate pandemic and tropical illnesses. The government of Tanzania created the Improved Community Health Funds (iCHF) as an insurance scheme to facilitate the achievement

of 21st-century healthcare goals. Since illness outbreaks persisted, action was taken to stop them. The findings of the first research question have shown that countries with poorly developed health financing policies suffer the most regarding health. For instance, Nigeria faced increased health challenges because of the lack of well-developed health financing systems. Secondly, health financing has contributed to African nations' attainment of health needs by efficiently transferring funds to the healthcare facilities system. Egypt is a prime example of this since the introduction of family smart cards has opened the door for low-income individuals to get medical treatment. Also, the National Health Insurance Funds in Kenya has set up a way for reimbursements to be paid from their endowment to medical institutions after patient treatment has been provided. This shows that money can be moved quickly and easily. Findings also established that Mobile Money Transfer in Cameroon has made getting health care easier, even in remote areas. Similarly, the government of Tanzania has instituted a new conditional cash transfer scheme to facilitate access to medical treatment. Lastly, healthcare financing has helped Africa reach its healthcare goals by giving healthcare institutions more money. Findings showed that Nigeria had increased funding for healthcare infrastructure by allocating additional funds to the Ministry of Health in the national budget. Additionally, as a middle-income nation, Egypt has maintained its healthcare system because of the several revenue streams identified by Ahmad et al. (2020). Also, a report by Results for Development (2022) reveals that Senegal has put money into health care through USAID-backed programs like universal health coverage and health system strengthening. Plus, with the help of the NHIF's Universal Health Coverage, Kenya's Direct Health Facility Funding has created a more reliable, transparent, and collaborative healthcare funding system. This helps achieve the long-term goals of healthcare in the 21st century. Cameroon and the DRC have also raised funds

to combat tropical illnesses and other diseases like HIV/AIDS with the assistance of non-governmental organizations and the United States Agency for International Development.

The second research question sought to uncover how the Africa CDC has contributed to 21st-century health needs in Africa. The research showed that the Africa CDC had maintained its significance in African nations by assisting the center in formulating a strategic plan for quick and effective infection detection, surveillance, and response. Findings showed that in Nigeria, pandemics had been dealt with in a logical way by the Africa CDC through effective surveillance, testing, and drug distribution. It is clear that the infections were dealt with quickly. Also, according to Talaat et al. (2016), the Egyptian CDC has tracked acute healthcare occurrences by encouraging the use of e-health and conducting reviews of hospitals' ability to treat various illnesses. Additionally, the Africa CDC has conducted extensive research in Kenya and Botswana in an effort to identify illnesses, aid with chronic infections, and establish research-based institutions. The Africa CDC has also funded medical research facilities across Africa to help increase their capacity and expertise in public health. The findings show that the Africa CDC has generously financed the National Veterinary Research Laboratories in the Plateau States to combat influenza. According to Redd and Frieden (2017), the Africa CDC has provided Senegal with improved medication, medical equipment, and vaccinations in preparation for a pandemic. Furthermore, Tanzania and the Democratic Republic of Congo have used Africa CDC frameworks through training the medical service providers, organizing workshops, conducting surveillance, and developing an emergency response to combat infections like Ebola. Also, the findings reveal that the Africa CDC has made it simpler for individuals in African nations, including Tanzania, Nigeria, and Kenya, to collaborate in the search for and containment of outbreaks. The Africa

CDC, the World Health Organization, and the United States Agency for International Development are all working together in Nigeria to halt the spread of HIV/AIDS. Tanzania and Kenya's health ministries have also requested that the Africa CDC collaborate with other research organizations, the World Health Organization, and other nations like China in an effort to contain the Ebola virus. Findings also showed that the Africa CDC had brought together the AU member states to work harder against diseases like Ebola, Malaria, and other ideas in Egypt, Kenya, South Africa, and Nigeria. This is because of lessons learned, knowledge shared, and frameworks for deciding when and how to intervene. The Africa CDC has also done a good job of assisting countries like Kenya, South Africa, Egypt, Botswana, and Nigeria in improving their compliance with international health standards and the Sustainable Development Goals. Furthermore, the Africa CDC has utilized IHR, UHC, and SDG frameworks to increase the Ministry of Health's awareness of the importance of fighting infections. Africa CDC has conducted studies in Nigeria to reduce the number of deaths, illnesses, and the spread of COVID-19 as part of its emergency health preparation efforts. The Africa CDC has also established laboratories in South Africa and Kenya as part of the Global Health Agenda to facilitate the rapid diagnosis and treatment of coronavirus infections.

The third research question examined how access to safe, efficacious, and quality medicine contributes to the attainment of 21st-century health needs in Africa. Findings revealed that access to safe, effective, and high-quality medicine has also helped Africa meet the health needs of the 21st century by making it easier to get medical equipment. For example, the supply of medical equipment has led to improved health. There hasn't been adequate medical equipment in Nigeria, according to Gbadeyan et al. (2017). However, the growth of respiratory diseases has prompted

the nation to make effective efforts to stem the tide of illness. The country has established medical supply chains to ensure that hospitals in South Africa have access to necessary medical supplies. This demonstrates that South Africa has an adequate supply of necessary medical tools. Egypt has also been working to combat the epidemic by creating locally available medical devices and opening companies nationwide. According to Kholaif et al. (2022), the Egyptian government should encourage a reliable medical supply chain to fill up the medical gaps that may otherwise compromise the quality of healthcare services provided to Egyptians. As a result of increased funding and international cooperation, Kenya has also gained access to a larger quantity of much-needed medical supplies. According to research by Ayah et al. (2020), between 77% and 91% of secondary referral hospitals in Kenya possessed the equipment needed to perform cesarean sections. The availability of sufficient medical supplies has allowed Sudan to privatize and liberalize its healthcare equipment supply, resulting in more profitable deals. Babar et al. (2019) reveal that Tanzania has made it easier to get quality goods by making effective procurements. Findings also showed that several countries, including South Africa, Egypt, Senegal, Nigeria, and Sudan, have prioritized expanding access to modern, effective medical equipment. As a result, Egypt has established e-health, while Senegal has created e-health and strengthened the medical and pharmaceutical sectors to expedite the provision of improved medical equipment. Findings also revealed that Through KEMSA, Kenya has also made it easier to get medical tools. Botswana has also built drug processing plants to ensure enough medical supplies. To ensure there are enough pharmaceuticals, Botswana has also constructed medication processing factories. By freely distributing X-rays, CT scans, and Kidney Diagnostic tools, South Africa has also shown that it has quicker access to modern, high-quality medical equipment. Tanzania and Cameroon have

enhanced their medical infrastructure with the World Health Organization and the Centers for Disease Control and Prevention to combat persistent infections like Ebola. In addition, the findings showed that the Sudanese Ministry of Health had tightened up pharmaceutical restrictions to boost the quality of imported medicinal goods (Ali & Omer, 2008). Overall, the results have shown that access to safe, quality, and efficacious medicine significantly promotes access to new quality medical instruments in the 21st century in African countries like Nigeria, Senegal, South Africa, Egypt, and Sudan.

The fourth research question explored the contribution of the supply of essential medicines in the continent towards achieving 21st Century Health needs in Africa. Research findings showed that the availability of essential medicines to treat malaria, pneumonia, measles, tuberculosis, and diarrhea has continued to help meet Africa's health needs in the 21st century. This has been accomplished by increasing access to essential medicines for malaria, pneumonia, TB, measles, and diarrhea. Data showed, for instance, that by ensuring that children in Nigeria have access to medications for treating conditions like pneumonia and malaria, the country has been able to reduce the rates at which they are dying or becoming unwell. Also, South Africa and other Sub-Saharan African nations have boosted their stock of antiretroviral drugs (ARVs), which are crucial in the fight against HIV/AIDS. The health-related SDGs may be achieved in this manner. Findings also showed that Kenya has made getting the medicines they need easier through Universal Health Coverage. According to Mandoko et al. (2018), the Democratic Republic of Congo is working tirelessly to provide low-cost anti-malaria medications to its citizens. According to Anand Paramadhas et al. (2019), the distribution of preventative medications in Botswana has been sped up with the support of the World Health Organization. This has allowed Cameroon's Ministry of

Health to satisfy 21st-century healthcare demands while keeping costs down. Findings also showed that medicines in the correct dose forms have boosted the performance of African healthcare systems. This is evident in Nigeria, where an ever-increasing variety of ailments necessitates the usage of various medications. Misoprostol has been used in Senegal to reduce maternal mortality. Possible evidence of Ceftriaxone's usage in Tanzania to combat bacterial chirality is provided by the study of Sasi et al. (2019). Findings also established that Africa has made progress toward its healthcare objectives because, most notably, necessary drugs are readily accessible in the healthcare system, and their quality is assured. For instance, KEMSA always buys medicine in Kenya that is guaranteed to be of good quality. Hassan et al. (2018) also showed that access to essential drugs paves the way for low-cost medical treatment for Nigerians. Results also demonstrated the need to legalize and use essential medicines to curtail the drug deficit and ensure quality with enough knowledge to satisfy Sudan's healthcare demands. Ismaeil and Musnad (2020) claim that this realization drove politicians to legalize the manufacturing and distribution of essential medicines. The results indicated that the government of Kenya has ensured that essential medicines are accessible in the healthcare system to control the spread of illnesses like malaria. For instance, for treating falciparum malaria, anti-malarial medications such as Artemisinin-based combination therapy have been made accessible in Embu County (Ndwigah et al., 2018).

The fifth research question examined ways Africa's state governments have contributed toward achieving 21st-century health needs. Findings revealed that the state governments contribute to the attainment of 21st-century health needs by ensuring transparency in dealing with health matters. For instance, findings revealed that the Senegalese government had established the National Anti-Corruption and Fraud Office (OFNAC) to combat corruption in the healthcare sector

(The World Bank, 2014). With its efforts to promote healthcare equity, Egypt has also opened its medical supply system. Secondly, findings revealed that the state governments have actively encouraged the formation of healthcare coalitions. Findings revealed that Egypt and the U.S. had worked together to improve the results of healthcare services to build alliances in the field (Sharp, 2022). Findings also showed that the Health Facility Governing Committee has also been used to increase transparency in other African nations, including Tanzania and DRC.

The healthcare systems of some African nations, including Egypt, South Africa, and Kenya, are monitored thanks to UHC programs. In order to prove that they are staying within their allotted funds, the DRC health departments provide precise figures every year. The results also showed that governance helps African countries meet the health demands of the 21st century by keeping an eye on healthcare systems to ensure the public is protected. For instance, the government of South Africa supports a developed system for monitoring district performance using metrics based on healthcare facilities (Day et al., 2021). Also, to prove they are staying within their allotted funds, the DRC health departments provide precise figures yearly. The results also showed that governance helps African countries meet the health demands of the 21st century by keeping an eye on healthcare systems to ensure the public is protected. For instance, the government of South Africa supports a developed system for monitoring district performance using metrics based on healthcare facilities (Day et al., 2021). The recent government actions in Kenya to promote UHC have also been shown by data to have improved the quality of healthcare services offered to Kenyans (Mogeni et al., 2019). The findings also indicated further actions African state governments took to enhance health, such as enacting regulations, guaranteeing equal access to opportunities, and coordinating health care delivery.

Since the formation of the AU in 2002 to promote solidarity and unity among African countries, promote security and peace, protect the rights of people, defend member states' sovereignty, and promote sustainable development (Bamidele, 2016), researchers are yet to examine how far AU has contributed towards the achievement of 21st-century health needs. Researchers in his field of study have only examined the strengths and weaknesses of AU. One of the strengths of the AU is that it has encouraged African leaders to become more liberal (Tieku, 2019). The last research question of this study furthers this study by examining how liberal leaders have contributed to the achievement of 21st-century health needs in Africa. The study findings have shown that government leaders promote transparency and accountability in dealing with health matters, promote coalition building in healthcare delivery, keep track of the performance of health systems, facilitate the implementation of government policies aimed at improving health outcomes, promote equity in the healthcare sector, coordinate the provision of healthcare services, and fund healthcare sector.

Pecking Order Theory (POT), a financial theory, was selected as one of the guiding theories for this research. This theory stipulates that managers prefer internal funding over external funding. Based on the study findings, it was found that most African nations have developed initiatives to facilitate internal funding instead of borrowing funds to meet 21st-century health needs. Another theory that was selected to guide this study is the Juran Quality Trilogy. According to this theory, quality management involves three distinct but interrelated facets: quality control, planning, and improvement. Concerning this theory, this study's findings revealed that AU helps African countries meet their healthcare requirements for the 21st century by instituting procedures to guarantee quality control, quality improvement, and quality planning of medicines and medical

equipment. Another theory that was used to guide this study is the classical theory. According to classical economic theory, if there are surpluses or shortages in natural production, the economy automatically employs self-adjustment processes to return to its pre-distorted form. The findings of this study reveal that the African nations are using self-adjustment mechanisms to fight the health crisis they are currently in, such as promoting access to quality and sufficient medicines and medical equipment through government-sponsored programs and initiatives.

Concerning the conceptual framework of this study, which indicates that local politics, policies, and bureaucracy moderate the relationship between the independent variables (health financing, Africa CDC, governance, access to essential medicines, and supply of essential medicines) and the dependent variables (malaria, tuberculosis, HIV/AIDS, diarrhea, and COVID-19), the findings have shown that this relationship exists, where health financing, Africa CDC, governance, access to essential medicines, and supply of essential medicines contribute to fewer cases of malaria, tuberculosis, HIV/AIDS, diarrhea, and COVID-19 through policies, bureaucracy, and local politics.

The study problem is that the health systems in Africa are in crisis. The findings of this study address this research problem by uncovering ways these systems can be improved to promote better health outcomes. African nations can improve their health systems by developing and implementing well-designed health financing policies, implementing efficient money transfer systems in healthcare facilities to facilitate a smooth and timely transfer of payment to the healthcare systems providing medical services, and ensuring the availability of healthy financing to pooling funds and raising revenue for use in delivering medical services within healthcare institutions. Also, to improve health systems, African countries should support the Africa CDC,

which allows Africans to attain 21st-century health needs by ensuring quick and effective detection, surveillance, and response to disease outbreaks, strengthening the capability and capacity of public institutions of health, strengthening partnerships to spot and retort quickly and efficiently to threats and outbreaks of diseases, and sharing and exchanging lessons and knowledge from public health interventions with the other AU member states. The study findings also reveal that African nations can improve healthcare delivery by promoting the supply of medical equipment, sufficient supply of medicine, access to new and quality medical instruments, and faster access to new and quality medical instruments. Also, African countries can improve their health systems by ensuring that essential medicines for managing malaria, pneumonia, tuberculosis, measles, and diarrhea in Africa are available in proper dosage forms and in assured quality and sufficient information. Lastly, African leaders can improve the state of health systems in Africa by promoting transparency in handling health matters, promoting coalition building in healthcare delivery, monitoring the health system, implementing government policies, promoting equity, and coordinating the advancement of healthcare.

The findings of this study have significant value. First, they uncover how much AU has attained regarding the promotion of health among African nations and pinpoint areas that need improvement. Through health financing, AU has ensured the implementation of well-designed health financing policies, efficient money transfer systems, and pooling of funds for healthcare institutions in some African countries. AU has also ensured quick and effective detection, surveillance, and response to disease outbreaks, strengthened public health institutions' capability and capacity, and strengthened partnerships to spot and retort quickly and efficiently to disease threats and outbreaks of diseases in some countries through the Africa CDC union. Additionally,

AU has led to an improved supply of medical equipment and medicines and has promoted access to new and quality medical instruments in African countries. AU has also promoted transparency in handling health matters, coalition building in healthcare delivery, improved health system monitoring, equity in the healthcare sector, and improved healthcare coordination through African leaders. Secondly, the findings of this study have been used to provide recommendations for applications tailored toward improving healthcare systems in Africa. AU can use these recommendations to improve how it delivers its mandate to ensure African nations attain the basic requisites for sustainable health systems. The findings of this study add to the scope of literature relating to AU and health outcomes in Africa, which is currently limited. The development of the Health Systems Dynamics Theory highlights that the issues of sustainable financing, the supply of essential medicines, and the role of the African CDC support intricate dynamics to shape health outcomes on the African continent. The theory underscores the intricate interplay of factors shaping health outcomes in Africa, emphasizing sustainable financing, essential medicine supply, and the pivotal role of the Africa CDC. It provides a comprehensive understanding of the interconnectedness and dynamic nature of the health landscape within the AU member states. The theory asserts that sustainable financing mechanisms, an adequate supply of essential medicines, and effective collaboration with the Africa CDC are integral components of a well-functioning health system. By acknowledging the complexity and interdependence of these variables, the theory guides policymakers and practitioners to adopt adaptive and collaborative approaches for addressing evolving health challenges on the African continent. It promotes a holistic perspective that recognizes the systemic interactions influencing health outcomes in AU member states. By doing so, the study forms the basis for future research relating to AU and its mandate in Africa.

Lastly, the section on the recommendation for future research identifies some gaps that future scholars can explore and enrich literature in this field of study.

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APPENDICES

Appendix A: Changes

A major change was made to the initial research proposal. The research subject was changed from "A Comparative Research on the Compliance to International Regulation set in African firms and International Organizations" to "The African Union in Meeting the 21st Century Development Needs of the African Continent". The first topic addressed an important issue in the African region- that of compliance to rules and regulations. The research sought to investigate why rules and regulations established in African firms are not followed compared to international organizations. While this research would have provided valuable information on the factors underlying noncompliance in Africa, it would have minimal impact in transforming the continent. After learning more about leadership and current issues in management, it became clear that a more impactful topic was necessary. It was vital to assess how much African organizations had achieved to pave way for greater social and economic growth. This led to the decision to study the African Union and its role in achieving Africa's 21st century development needs in health and leadership.

Appendix B: Data Summary

Research Question	Data Summary
RQ1	• There is a significant positive relationship between health financing and quality of life (Nathaniel & Khan, 2020). • Nigeria's health sector has been consistently underfunded by the government, as seen by low allocations to the health sector, which has led to poor health system performance (Ezenwakae et al., 2022). • Nigeria has inefficient health financing policies (Onwujekwe et al., 2019). • Government expenditure on health in Nigeria remains low (accounts for only 0.5% of Nigeria's GDP and 16% of the overall health expenditure) (Ezenwakae et al., 2022). • There are many players in Egypt's healthcare system, from government agencies to multiple financing agents and sources (Ahmad et al., 2022). • Egypt is among the low-income nations, with a GDP of about $3100 as of 2019, but the country has attained positive steps toward the improvement of its people's health status over the past years (Ahmad et al., 2022). • Egypt has several sources of health financing, including Out-of-pocket (OOP) payments, an earmarked cigarette tax, direct and indirect taxes, social health insurance, and private health insurance) (Ahmed et al., 2020; Fasseeh et al., 2022). • Egypt plans to expand its existing Family Smart Card (FSC) and use it to provide healthcare services to poor households (Pande et al., 2015). • Senegal's government has the chance to attain UHC by 2022, but only with sustainable funding (Results for Development, 2022). • Senegal's journey to achieving UHC is supported by a national health financing policy that sustainably and equitably funds a UHC (Results for Development, 2022). In a different study examining factors that facilitate and hinder the sustainability of departmental health insurance units in Senegal, Ridde et al. (2022) revealed that • Actions performed to ensure financial stability and organizational risk-taking are considered to be favorable sustainability aspects (Ridde et al., 2022). • Although Sudan is regarded as a LIMC, the nation has a well-established healthcare system whose main strength is the existence of a full package of policies and strategic plans (Ebrahim et al., 2017) • The healthcare system in Sudan has a full package of long- and short-term strategic plans and policies (Ebrahim, 2017).

	• To overcome the persisting challenge of lack of proper health information in Sudan's healthcare system, it is important that the national partners with external funding institutions (Eltahir & Abdallah, 2021). • Sudan has adopted Primary Health Care (PHC) as the main strategy for healthcare since 1976, and throughout the future, strategies and plans of PHC have been emphasized (Ebrahim et al., 2017). • Strengthening the health system by enhancing the distribution and effective utilization of funds in the DRC has reduced treatment costs for patients and improved the quality and uptake of services (Global Financing Facility, 2019). • The Ministry of Public Health of Cameroon is in charge of health policymaking and has achieved so much in the past decade (Sieleunou et al., 2017). • Cameroonians use Mobile Money Transfers (MMTs) to pay their healthcare bills (Talom & Tengeh, 2019). • Cameroon's healthcare system is funded by international donors (Sieleunou, 2017). • Cameroon's life expectancy has decreased, and its under-5 child mortality rate has decreased at one of the slowest rates in the world during the previous two decades due to a lack of risk pooling (Chireshe, 2018). • The healthcare system in Cameroon is pluralistic because it relies on a wide variety of providers and funding mechanisms to offer medical services. • The health spending per capita in the Democratic Republic of the Congo (DRC) is much lower compared to other low-income nations. To get closer to UHC targets, the nation is now reworking its health financing policies (Laokri et al., 2018). • The International Development Association (IDA) of the World Bank is contributing US$340 million to the DRC's national plan, while the Global Funding Facility (GFF) is providing US$60 million in grant financing (IDA) (Global Financing Facility, 2019). • Tanzania's health financing system is highly fragmented, with multiple mechanisms put in place to supplement the finances received from the central level (Renggli et al. (2019). • Tanzania has two primary insurance programs: NHIF and the improved Community Health Fund (iCHF). NHIF mostly covers the public sector, while iCHF is a voluntary plan for the informal sector (Afriyie et al., 2021).

	• The World Bank and the government of Tanzania collaborated to design a novel conditional cash transfer program (The World Bank, 2022). • Tanzania is developing a comprehensive Health Financing Strategy (HFS) (Dutta, 2015; Kapologwe et al., 2019). • The Kenyan government visualizes using National Hospital Insurance Fund (NHIF) as a vehicle to facilitate the implementation of UHC (Atim et al., 2021). • Inadequate funding was a major barrier in Kenya that led to the failure of the achievement of the UHC (Atim et al., 2021). • M-Tiba in Kenya allows individuals to save money on their phones and pay for healthcare services from a distance (Mwangi, 2019). • The Kenyan healthcare system has a budgetary allocation to health sectors (Mogeni et al., 2019). • Morocco has implemented RAMED (*Régime d'Assistance Médicale*) to facilitate the financing of the healthcare system in the country. The RAMED is an affordable medical care program for low-income families (Akhnif et al., 2019). • Morocco has developed various policies to facilitate medical coverage. Some of the developed systems include Compulsory Health Insurance (AMO) and Medical Assistance Scheme (MAS) (Zahidi et al., 2022). • Morocco has also implemented the "Moroccan Ministry of Health (MoH) Strategy 2025". This policy seeks to restructure and advance the country's healthcare system to expand people's opportunities to get medical treatment, streamline administrative processes, and make better use of available resources (El Otmani et al., 2021). • The study by Kiendrébéogo et al. (2022) depicts that Universal Health Coverage enhances the medical provider to the poor citizen, effectively fighting infections like Malaria and Ebola in a developing West African country. • The government also increased the funding for healthcare due to the increasing population and the need to adjust to sustainable health coverage, according to the study by Tandon & Reddy (2021). • The study by Mutasa (2019) depicts that Zimbabwe developed Zimbabwe's National Health Strategy that took effect from 2021 to 2025 to advance its vision of financing healthcare to reach 21st-century healthcare needs. • Sections of the money from the United States Oil have been directly channeled to the healthcare system to facilitate healthcare provision, according to a study by Appel (2019).

	• Burkina Faso implemented the mobile money transfer system with playbill numbers to enhance the faster money transfer to healthcare facilities, according to the study by N'dri & Kakinaka (2020). • Sections of the money from the United States Oil have been directly channeled to the healthcare system to facilitate healthcare provision, according to a study by Appel (2019). • The study by Durham et al. (2020) depicts that the government of Ivory Coast implemented Performance Based Financing, which is based on the quality and the quantity of performance as an initiative to improve the healthcare system. • The government of Mozambique made the finances available for the health institutions by facilitating the combined efforts of the private and public sectors, according to the study by Anselmi et al. (2023). • The Government of Ghana created the National Health Insurance Scheme (NHIS) under Act 650 of 2003 to provide Ghanaians with access to a variety of healthcare services via district mutual and private health insurance plans (Blanchet et al., 2019). • The Republic of Namibia's government has made it a top priority to find long-term solutions for funding health care that would guarantee all citizens of the country prompt and equal access to high-quality medical care (Ohadi et al., 2016). • Namibia implemented the Medical Aid Funds (MAF) Act 23 in 1995, which was overseen by the Namibia Financial Institutions Supervisory Authority (NFISA). The act regulates the medical aid funds in the country (Ohadi et al., 2016). • One of the factors that have delayed Swaziland in achieving its 21st-century health needs is the lack of efficient money transfer systems in healthcare facilities. • Medical assistance funds in Namibia may be classified as either open or closed, reflecting the maturity of the country's health insurance market. • Healthcare institutions in Zambia allow patients to make payments using efficient money transfer systems such as mobile payment systems, Electronic Funds Transfer (EFTs), and Automated Teller Machines (ATMs), • Sources of health system financing in Morocco include employers (1.2%), tax revenue (24.4%), health insurance (22.4%), households (50.7%), and international cooperation and others (1.3%) (Akhnif et al., 2020). • In 1993, Zambia launched a Sector-Wide Approach (SWAp) in the health sector with the aim of enhancing efficiency in the utilization of externally sourced development aid and domestic funds.

	• The health system in Mozambique is financed by external funds from donors, the state budget, and OOP payments contributions (Llop-Gironés et al., 2019). • Zambia has invested in various healthcare financing reforms with the goal of attaining universal access to healthcare services (Rudasingwa et al., 2022). • Namibia's present health funding resources are pooled into three separate schemes, including the government scheme, PSEMAS, and individual medical assistance programs, to support treatment for various demographic segments (World Bank, 2019). • Other sources of health system financing in Namibia include donor funding, OOP expenditure, and prepaid private expenditure (Allcock et al., 2019). • In Ghana, a 2.5% national health insurance tax from VAT now covers between 70% and 75% of the financial needs of Ghana's healthcare (Laar et al., 2021).
RQ2	• There is a significant relationship between the efficiency of the healthcare system and the strategy initiated by the Nigerian Center for Disease Control (Mohammed et al., 2021). • Nigeria has achieved health infrastructural development and the increased capabilities of healthcare institutions in the 21st century through the CDC (Oloruntoba, 2021). • In conjunction with the Nigerian Army, the CDC has pioneered the formation of an emergency preparedness unit to sensitize the general society (Mohammed et al., 2021). • Egypt has promoted supply chain management in healthcare to bridge the healthcare delivery gap through CDC (Talaat et al., 2016). • The innovations and inventions by CDC have created a framework through which Egyptian healthcare has and plans to use e-health to increase medical service delivery (Talaat et al., 2016). • E-health has increased the relationship between healthcare providers and patients (Breiman et al., 2017). • CDC has intensified the Ministry of Health in Senegal to provide effective vaccines, medicine, and medical equipment for the control of contagious diseases like Ebola (Redd & Frieden, 2017). • The Africa CDC has made emergency preparedness possible in Senegal to combat anthrax and other diseases (Medinilla et al., 2020). • CDC in Senegal has partnered with other organizations like WHO to create sustainable healthcare provision (Redd & Frieden, 2017).

	• CDC has enabled the Ministry of Health in Sudan to create emergency preparedness through research and innovations (Ali & Omer, 2008). • CDC has achieved Sustainable Development Goals through the regulation of the production of medicines and medical equipment (Ali & Omer, 2008). • AU member states' departments of Health have partnered with the Sudan Center for Disease Control to manage and control the spread of COVID-19. • South Africa has used Universal Health Coverage as an initiative developed by the Centers for Disease Control (Benson et al., 2016). • CDC in South Africa has implemented emergency preparedness through research and innovations by building medical infrastructures (Medinilla et al., 2020). • The Centers for Disease Control has promoted lessons and knowledge sharing to manage the crisis. • CDC has heightened the capacity of healthcare institutions by increasing the number of healthcare workers (Benson et al., 2016). • According to CDC global project data, the CDC in Botswana, in collaboration with the government, has funded the work of antibiotic resistance to determine the genetic mechanism of resistance and its relationship with the multidrug Gram-negative extension spectrum cephalosporin-resistant Enmterobacteral (CDC AR GLOBAL PROJECT, 2022). • Africa CDC, in collaboration with other healthcare organizations, has sensitized the Ministry of Health to integrate the Health Information Exchange (Mamuye et al., 2022). • As Cameroon's health body, the Center for Disease Control has made the country implement the National Action Plan for health security, which will act as an emergency preparedness platform to control and prevent the spread of infections (Fossouo et al., 2020). • According to the data generated by the research study of Fossouo et al. (2020), the World Health Organization, in conjunction with CDC, has accelerated the move by the Cameroonian government to develop a comprehensive response mechanism to fight emerging infections. • CDC, together with the United States and international partners, mounted a constructive response mechanism to end the Ebola infections (Bell, 2016). • CDC and the Democratic Republic of Congo have implemented the International Health Regulations to control emerging pandemics like Ebola (Kennedy et al., 2018).

	• The emergence of a severe acute respiratory syndrome outbreak in DRC made the World Health Organization, together with the Center for Disease Control, construct laboratory facilities, healthcare centers, and research-based institutions hence increasing the healthcare capabilities through surveillance, workforce development, emergency response, and the outbreak investigations (Kennedy et al., 2018). • CDC and the government have created a mechanism for equipping public health hospitals with valuable skills in handling infections. • The first Center for Disease Control and Prevention Field Epistemology Training Program Intermediate Course in Africa has strengthened the healthcare service delivery by training epidemiologists to prevent, respond and detect the illness that may cause harm to the general public (Wilson et al., 2021). • Through the one health strategy, CDC has enabled the Tanzanian government to monitor human populations that live in close proximity to animals hence resorting quickly to any emerging infections (Wang, 2019). • CDC has accelerated the detection of infectious diseases in Kenya (Munyua et al., 2019). • It has also managed to conduct surveillance in developing the zoonotic disease unit. • The Global Health Security Agenda is a strategy developed by CDC Kenya to enable Kenya to develop the initiative of respiratory disease prevention mechanism (Idubor et al., 2020). • The study by Ochu et al. (2021) depicts that CDC in Morocco has responded to the global war on COVID-19 using local strategies, which entail free application and testing, research, sensitization of the communities against the infections, and the building of the research centers to facilitate the research-based approaches. • As depicted by the research by Duong et al. (2019), CDC in Swaziland has encouraged citizens to undergo rapid testing and counseling through the strategic survey, which provides a cost-effective way of managing infections. • According to the study by Angula (2020), the Ministry of Health and Social Services in Namibia has used the CDC as a framework to realize its Vision 2030 goals on effectively managing infections. Realizing the vision involves research on the health information system that entails the integration of technology to facilitate effective disease surveillance. • Through the CDC, the Ministry of Health in Ghana has managed to control the infections through comprehensive testing and diagnosis (Acheampong et al., 2020).

	• Through the CDC, the Ministry of Health in Ghana has managed to control the infections through comprehensive testing and diagnosis (Acheampong et al., 2020). • The Africa Center for Disease Control in Côte d'Ivoire developed a Task Force as a strategy to fight COVID-19 in 2021, as per the study by Adebisi et al. (2021). • According to Africa C.D.C. (2021), the pharmaceutical producers in Morocco have combined forces with the CDC to manufacture drugs and other pharmaceutical products that aid in the research and the response to the infections like COVID-19. • Namulondo et al. (2021) assert that the management of COVID-19 infection has been accelerated by CDC in Zimbabwe. • According to World Health Organization (2019), the National Health and Security has been strengthened in Accra, Ghana, by CDC to provide a ground for managing infections and pandemics. • The study by Therrell et al. (2020) depicts that Morocco has managed to manage the infections by sponsoring healthcare intervention programs and research using the knowledge generated from other African development partners. • The public health policies beyond the states have been framed by the CDC in Zimbabwe to limit the economic sanctions of the African member states as a way of promoting economic development, as realized through the research by Engel (2020). • The study by Marraha et al. (2021) depicts that CDC in Morocco has worked with WHO to recommend the need of African nations and the health departments in Morocco to get prepared to curb the infections like COVID-19. • Zambia has implemented Smart Care, a digital strategy for achieving the sustainable development goal in healthcare. CDC has developed Smart Care on behalf of the Zambian government, which has become a strategic agenda for promoting e-health in Africa, as depicted by Kaumba (2023). • The Ministry of Health in Equatorial Guinea, together with the CDC, has strengthened the laboratory network and the manufacturing of drugs, which has enhanced the provision of emergency services gains the number of rising infections, according to the study by Njukeng et al. (2022). • Innovation has continued to characterize Burkina Faso's CDC because of the determination of the country to reduce morbidity and mortality rates. Ivory Coast Government and the Ministry of Health have prepared healthcare personnel collaborating with CDC to manage emergency infections (Guetiya & Clarke, 2021).

RQ3	• The use of e-health and new medical technology has promoted healthcare provision in Nigeria (Gbadeyan et al., 2017). • Nigeria has encouraged the effective supply of medical equipment by granting different suppliers the mandate of becoming the supply, reducing the overdependence on one supplier. • The Nigerian government has promoted easy access to medical instruments through investments in pharmaceutical companies (Gbadeyan et al., 2017). • The adoption of e-health in Egypt in the first phase will promote patient and medical health provider interactions (Badran, 2019). • Egypt has realized the need to combat the bureaucratic practices that may be a detriment to the healthcare provision hence increasing the efficiency and effectiveness of healthcare provision in the 21st century (Elsafty & Osman, 2021). • The creation of the paradigm shifts the cost-effectiveness has enhanced healthcare quality by providing new medical equipment and adopting the latest knowledge in handling the healthcare crisis (Badran, 2019). • The construction of pharmaceutical companies in Senegal has also reduced overreliance on medical exportations (Shu-Acquaye, 2017). • An efficient and effective supply of medicine and medical equipment has created a framework for enhancing efficiency in the medical industry (World Health Organization, 2015). • Senegal has adopted the use of drones in medical surveillance (World Health Organization, 2015). • Federal General Director of Pharmacies works together with the pharmacy and poisons board in Sudan to enhance effective supply chains in medical industries. • The creation of enabling environment through the privatization of the healthcare system in Sudan has increased the quality of healthcare service provision by creating healthy competition as opposed to bureaucracies. • Pharmaceutical regulations have enhanced the safe, efficient, and effective medical equipment supply. • Medical equipment has been effectively supplied for the provision of safe and quality healthcare in South Africa (Mattew, 2019). • Quality of medical service provision in hospitals (Mattew, 2019).

	• Hospitals and healthcare facilities continue to deliver their effective services through an effective and efficient supply of medicine (Benson et al., 2019). • Transporting medical supplies throughout Cameroon is difficult (Ministry of Foreign Affairs, 2021). • There is a low supply of medicine in Tanzania, contributing to poor health outcomes. • Government officials in Kenya have decided to waive value-added tax on medical equipment imports (Ministry of Foreign Affairs, 2021). • A survey of 22 secondary referral hospitals in Kenya revealed that 77%–91% of the facilities had the necessary tools to perform a cesarean section (Ayah et al., 2020). • Access to safe, officious, and quality medicine has contributed to the 21st-century health needs in Kenya through promoting access to New Quality medical instruments by the Ministry of Health and other healthcare organizations (Kiarie, D., & Kamanda, 2020). • Before the supply of medical commodities, KEMSA supplies all the counties in Kenya with the price lists, which are viewed by the health administrators in the counties in lLMIS (Kiarie, D., & Kamanda, 2020). • The use of Universal Health Coverage in county government has enabled KEMSA to receive sustainable funding from the county government hence accelerating the medical supply (Kiarie, D., & Kamanda, 2020). • The government of Tanzania has managed to rapidly access new and quality medical instruments through the use of contemporary technology (Poljak & Šterbenc, 2020). • According to the study by Poljak & Šterbenc (2020), clinical microbiology in Tanzania implemented the application of drones in managing infectious diseases (Poljak & Šterbenc, 2020). • The new medicines, samples, vaccines, lifesaving medical supplies, organs, and new equipment have been efficiently delivered by the drones through the piloting programs and new implementations (Poljak & Šterbenc, 2020). • Cameroon managed to get the new medical instruments in readiness for the Ebola infections that have been a threat in many African countries (Bibaa, 2020). • According to Bibaa (2020), Cameron implemented the strategy of accessing new medical instruments and drugs rapidly by increasing the procurement funds and getting aid from the WHO as well as the CDC.

	• The video surveillance technologies created a framework through which the new medical services were delivered effectively to the healthcare providers (Bibaa, 2020). • Botswana has also managed to generate a framework for accessing new and quality medical instruments to promote primary access to healthcare (Umviligihozo et al., 2020). • The study by Umviligihozo et al. (2020), the development of a new supply chain in the delivery of medical instruments in Botswana has promoted the quality provision of PPEs and drugs to mitigate the increasing infection of COVID-19 (Umviligihozo et al., 2020). • Swaziland is characterized by a shortage supply of medical equipment due to low budget allocations to the Department of Health (Sukati et al., 2018). • Namibia intensifies its medical supplies by collaborating with its allies, especially China, to promote a sufficient supply of medical equipment (Lucas, 2022). • The digital agenda of Ghana incorporate the supply of modern medical equipment aligned with the current technology for the effective delivery of healthcare services. The digital agenda continues to be the fastest-growing health reform in Africa (Demuyakor, 2020). • The major diseases leading to death are cancer, malaria, and other chronic infection, which has derailed the activities within the countries. Through the support of the international organization, the government has made it possible for healthcare providers to receive effective equipment to fight against infection to meet the 21st-century healthcare needs in Africa (Ashburn et al., 2020). • Zambia uses the project procurement plan to manage the effective supply of medical equipment (Mwiche, 2019). • The research by Oxford Analytica (2020) depicts that Obiang, the president of Equatorial Guinea, has made it possible to manage the availability of medical equipment by pleading for international assistance from Spain and France. • Morocco has enhanced the supply of medicine by constructing the medical industries to improve production and limits the global competition over the importation from key medical suppliers (Darouich & Dhiba, 2020). • Namibia has developed grass-root methods of monitoring the medicine shortage in the country to determine the mechanism of effective supply to the nation (Rennie et al., 2020).

	• The government of Mozambique has made it possible for the Ministry of Health to achieve 21st-century healthcare needs by implementing affordable healthcare that enables the health centers to receive medical supply subsidies from the government (Blankley, 2021). • According to research from the World Health Organization (2019), Morocco has doubled its capability of handling many patients in public and private hospitals due to the increasing procurement of new and reliable medical instruments with the assistance of artificial intelligence in the medical sectors. • The test techniques in Zimbabwe have been transformed from a traditional to an evidence-based framework through technology in medicine (Ondoa et al., 2021). • Long scientific collaboration between scientists, doctors, and manufacturers has enhanced easy access to quality medical instruments, promoting Mozambique's ability to fight emerging infections (Malatesta et al., 2023). • Namibia uses an effective mobile system to promote the application of the medical instruments that are contemporarily generated to provide healthcare services (Shaakina et al., 2020). • The National TB program in Mozambique has been generated using quality medical instruments (Lisboa et al., 2020). • Easy access to quality medical instruments has enabled Equatorial Guinea to intensify the supply of ICT tools, which aid in the research and the detection of the illnesses like COVID-19, TB, and HIV/AIDS (Magobowon & David, 2023).
RQ4	• Pneumonia is a major cause of child mortality in Nigeria, killing over 140 000 children per year (Wonodi et al., 2020). • There is a lower decline in under-five pneumonia death rates (8%) in Nigeria compared to the global decline (50%) (Wonodi et al., 2020). • Essential medicine enables Nigerian citizens to obtain affordable healthcare (Hassan et al., 2018). • Misoprostol has contributed to the health needs of expectant mothers in proper dosage in Senegal to reduce the mothers' mortality rates through safe abortion (Ndao et al., 2018). • Enhancing healthcare needs in Sudan requires the legalization and the usage of essential medicine to cur the drug shortage in assured quality with sufficient information (Ismaeil & Musnad, 2020). • South Africa has developed Standard Treatment Guidelines and an Essential Medicine List (STGs-EML) to make sure that cost-effective, safe, and effective essential medicines are available and

	promote rational utilization of medicines (Perumal-Pillay & Suleman, 2021). • Although South Africa has a high prevalence of HIV/AIDS, the improved access to and uptake of antiretroviral (ARV) therapy has allowed infected individuals to live healthier and longer lives, which has led to lower AIDS-related deaths in the nation (Meyer et al., 2017). • South Africa has developed policy frameworks to legalize the supply and usage of essential medicines in the right quantities to enable citizens to access them at pharmacies at affordable prices (Duku, 2022). • The high empirical use of antimicrobial drugs has prevented other sexually transmitted infections (Anand Paramadhas et al., 2019). • The High usage of IV antibiotics and the construction of the variable infrastructure in the hospitals for the appropriate storage of the fragile drug have led to the extension of the fight against pneumonia infections in Botswana (Anand Paramadhas et al., 2019). • As a low-income country, Cameroon has managed to actively fight premature deaths due to the tuberculosis infections that had characterized the western region. • According to the study by Dzudie et al. (2020), essential medicine has been made available and cost-effective to the healthcare facilities in Cameroon by the ministry of health in conjunction with organizations like the Centers for Disease Control and the World Health Organization (Dzudie et al., 2020). • The costs have been made affordable to the public in the government hospitals hence creating a condition of fighting the infections towards reaching the 21st-century sustainable development health goals (Dzudie et al., 2020). • The study by Mandoko et al. (2018) depicts that the national government has made Artemisinin-based combination therapy available to private health centers and pharmacies through the ministry of health. • Since Malaria infection is common in the warzone region of the Democratic Republic of Congo, the government has continued supplying medicines and medical equipment to public health facilities and has encouraged the private sector to work towards reaching sustainable healthcare provision in the country. • The private health sector has become the major distributor of anti-malarial drugs in the area, making the nation fight malarial infection at sustainable rates (Mandoko et al., 2018). • Proper dosage of essential medicine has become an idea in contemporary medication in the health sector. It aims to control

	morbidity and mortality in African countries, especially in Tanzania (Sasi et al., 2019). • According to Sasi et al. (2019), the prescription of ceftriaxone as an antibiotic has reduced bacterial infections due to medical personnel continued use of the recommendations and the dosage guidelines. • Medicines with a stereogenic center get presented as racemates mixed with equal amounts of enantiomers in Tanzania (Mwamwitwa et al., 2020). • According to the research by Ndwigah et al. (2018), anti-malarial drugs like Artemisinin-based combination therapy have been made available in Embu County to treat falciparum malaria. KEMSA, through its strict obligation, has managed to terminate the possibility of falsified anti-malarial medicines in the Sub-Saharan African country. • Therefore, reducing child mortality and morbidity through assured quality and recommendation of anti-malarial and anti-pneumonia medication has contributed amicably to the 21st-century health needs in Kenya (Ndwigah et al., 2018). • Kenya has increased the supply of essential medicines to curb diarrhea and measles. The fight against measles has been exhibited through intensifying free vaccinations of children under five (Kisangau et al., 2018). • The emergence of COVID-19 increased the detection rate of Tuberculosis in the country**,** making the government increase awareness due to the similarity of symptoms in TB and COVID-19 (Bouaddi et al.,2021. • The government of Namibia has increased the vaccination rate against measles and TB in the country hence managing the infection. The vaccines are 93% to 97% effective in managing infections (Nakambale et al., 2022). • Mozambique has greatly reduced child death due to its ability to manage malaria, measles, and pneumonia by making its medicine available at low cost (Batura et al., 2022). • The Pneumococcal vaccine was widely used in Northern Ghana as an essential medicine for pneumonia infections. MMMRV drugs and vaccines have also been used in Ghana because they are available to manage the measles outbreak (Asumah et al., 2023). • Health centers have been equipped with drugs in Zambia to manage malaria, Tuberculosis, and measles (Kim, 2022). • Several drugs are only found in the government healthcare system but cannot be found in clinics in Swaziland (Ncube et al., 2020).

	• The data generated by Baxerres & Cassier (2022) depicts that the medical research in Ivory Cost has improved, leading to their ability to manufacture essential medicine in their local industries. • Opioid medications have been used in Equatorial Guinea to promote surgical operations (Yao et al., 2023) • Morocco has provided effective podiatric care to patients due to the availability of essential medicine in proper dosage (Yafout et al., 2022). • The primary care programs in Mozambique have been facilitated by the availability of essential medicine in proper dosage hence reducing the morbidity and mortality caused by tropical diseases (Andrew et al., 2021). • Zambia is characterized by healthcare policies that promote the prescription of medicine in proper dosage (Manda, 2019). • As a way of promoting pediatric health, the government of Equatorial Guinea enhanced quick access to essential medicine through importation (Jimenez-Fernandez et al., 2023).
RQ5	• Good policymaking, budgeting, supervision, and accountability systems are essential to the success of any national health system if it is to meet its obligations to its citizens (Tejuoso et al., 2018). • Nigeria has implemented or planned ambitious programs to deliver HIC (Abubakar et al., 2022). • Nigeria, to progress on its commitment to UHC, more resources along with effective governance will be required (Ezenwaka et al., 2022). • Although Nigeria's health system is managerially and financially overwhelmed by multiple disease burdens, governance, and health financing are renowned contributors to the country's current state of the health system (Tejuoso et al., 2018). • One of the Egypt government's commitments is to attain UHC, which is a significant way of ensuring social justice in healthcare (Pande et al., 2015). • Egypt and the US have a close relationship because they have similar goals for regional security, economic growth, and peace in the Middle East. This coalition has improved Egypt's health (Sharp, 2022). • The state government of Egypt has made achieving UHC a priority, seeing it as a means of achieving social justice in healthcare (Pande, 2015). • The Egypt government issued the UHI Law in 2018 to provide its citizens with more health coverage and cover all its citizens with sufficient financial protection (Khalifa et al., 2022).

	• The Senegalese government is making strides toward reforming public finance management to promote transparency and eradicate corruption with the help of World Bank funding and technical assistance (The World Bank, 2014). • The government decentralized the Senegalese health system in the middle of the 1990s so that district and community authorities could develop and implement context-specific strategies to enhance service delivery (Cothran, 2019). • The national government of Senegal has set ambitious goals for eradicating malaria, fostering a secure and generous funding system to receive generous contributions from private sector partners, improving maternal health, and fostering a sense of community ownership (Skogg, 2021). • The main source of finances in Sudan's health system is government expenditure (Salim & Hamed, 2018). • The facilities of the PHC include PHC units served by community healthcare providers while dressing stations are served by nurses. Dispensaries are under the care of medical assistants, while rural hospitals and help centers are run by doctors (Ebrahim et al., 2017). • South Africa has a government-sponsored mature system of keeping track of district performance that encompasses health facility-based indicators (Day et al., 2021). • Also, the South African government keeps track of the country's health system by monitoring the number of facilities, patients, patients, and external PuPs registered per province (Meyer et al., 2017). • South African government has invested significantly in social programs since post-apartheid (de Villiers, 2021). • South African government has established strategies, charters, policies, and plans in place in an effort to improve public health system performance and health service delivery (Malakoane et al., 2020). • It is the leadership and management's responsibility to guarantee strategic direction and supervision in regulating and executing health-related services. • Cameroon's healthcare system is pluralistic because it involves various sources of financing, among which government is its main source (Sieleunou et al., 2021). • In collaboration with GFF and key stakeholders, the DRC government has prioritized the development of financing mechanisms in the country (Global Financing Facility, 2019). • DRC government is now able to provide more accurate yearly statistics to monitor expenditure and outcomes and guarantee

	sustainable finance for key health services (Global Financing Facility, 2019). • DRC federal government has set up a new fiduciary body to monitor financial transactions and optimize the use of national and provincial resources (Global Financing Facility, 2019). • Health Facility Governing Committees (HFGCs), made up of local residents, are responsible for managing individual healthcare facilities (Renggli et al., 2019). • The Tanzanian healthcare system relies mainly on central-level funding from tax revenues (Afriyie et al., 2021; Maluka et al., 2018; Renggli et al., 2019). • Healthcare financing arrangements changed dramatically in Kenya in 2013 following the devolution of the government (Kairu et al., 2021). • The recent government measures to promote UHC have assisted in improving the quality of healthcare services available to Kenyans (Mogeni et al., 2019). • In 2010, the Kenyan government implemented policies to revamp the country's healthcare system (Mbindyo et al., 2020). • Kenyan county governments are responsible for healthcare policy implementation and resource management (Mauti et al., 2019). • The Kenyan government promotes healthcare Equity through UHC (Laokri et al., 2018; Mogeni et al., 2019). • Kenya has an official mechanism for collaboration with development partners via the sector-wide approach (SWAp) (Mogeni et al., 2019). • The ghanian government implemented the Medicines Transparency Alliance (MeTA) program between 2008 and 2015 which established a framework for a wide range of nongovernmental, private, and governmental organizations to gather, analyze, and share pharmaceutical information in an effort to boost accountability and transparency in the pharmaceutical industry (WHO, 2022). • The Zambian government is now implementing an ambitious Whole-Of-Government Monitoring and Evaluation System (WoGM&ES) to enhance its public sector learning, feedback, and accountability activities (Kanyamuna et al., 2020). • The Good Governance for Medicines (GGM) project was implemented by Zimbabwe in 2015 with the goal of enhancing accountability and transparency within the pharmaceutical industry (Maponga et al., 2022). • Stakeholders' event in 2012, the Ministry of Health (MoH), on behalf of the Swaziland government, officially launched the EHCP (Magagula, 2017).

	• Country Cooperation Strategy (CCS) for Namibia describes the business strategy of WHO for each nation from 2010 to 2015. The strategic agenda reflects WHO's mandate, comparative advantage, policies, guiding principles, and global and regional agendas, and it is in line with the Government of Namibia's health plan (WHO, 2022). • An EHCP implementation event in 2012 was attended by representatives of development partners, senior government officials, members of the two health portfolio committees of Parliament, regional health management committees, and other health sector players (Magagula, 2017). • Ministry of Health and Social Welfare (MOHSW) in Equatorial Guinea has updated the National Health Policy (NHP) and developed a National Health Development Plan (NHDP) to direct the health program framework for the next five years with the technical support of the WHO and the collaboration of other development partners in order to fulfill this political commitment (Guinea Equatorial Salud, n.d.). • The Directorate of Pharmacy Services (DPS) at the Ministry of Health and Child Care (MoHCC) and the WHO Country Office launched Zimbabwe's GGM program in 2015 (Maponga et al., 2022). • The Namibian MoH is responsible for ensuring that all citizens and legal permanent residents of Namibia have access to adequate medical care (Shaanika & Iyamu, 2020). • Guinea Equatorial Salud. (n.d.) revealed that to ensure universal access to quality health services for the entire population and achieve healthy longevity, the Government of Equatorial Guinea is fully committed to the implementation of Sustainable Development Goal (SDG) No. 3 during the 2030 horizon. • The Human Resources for Health (HRH) policy was created to address the availability and usage of HR in Swaziland in light of the importance of this factor in healthcare provision. • Ghana Health Service (GHS) recognized the need to address the high incidence of maternal mortality in the country. It established a number of policies aimed at doing just that (Adua et al., 2017) • Morocco adopted a new Constitution with seven articles devoted to health, including Article 31's guarantee of universal access to health services and Article 154's guarantee of access to quality health services (Tinasti, 2015). • The Zambian government supported the implementation of the 2013 National Health Research Act and the 2010 National health research policy. • A fundamental shift in health finance policy was made by the newly elected government of Burkina Faso in March 2016 when it chose to

	eliminate direct payment for healthcare for mothers and children under the age of five (Bicaba et al., 2020). • Swaziland government has adopted the use of the Urban HEART (Makadzange et al., 2018). • The Government of Zimbabwe (GoZ) is tasked with providing them with accessible, high-quality healthcare that to ensure that all citizens of Zimbabwe have the best possible health and standard of living (The World Bank, 2023). • The Mozambican government is advocating for increased healthcare access that is both high in quality and equitable for all citizens. • To promote health equity in the nation, the government of Morocco has chosen universal healthcare by instituting both mandatory health insurance and a scheme of health assistance to the poorest households (Boutayeb et al., 2016). • The government of Burkina Faso eliminated healthcare user fees for mothers and children under the age of five in 2016 (Samadoulougou et al., 2022). • All Mozambicans have a guaranteed right to medical care under the country's constitution (Llop-Gironés et al., 2019). • Over the last three decades, the government of Zambia has enacted many UHC reforms to broaden the population's access to and use of healthcare (Rudasingwa et al., 2022). • Zimbabwe's government is charged with ensuring that all citizens have access to medical treatment and that care is both sufficient and affordable (Roets et al., 2020). • Numerous strategies and interventions have been adopted by the Moroccan MSPS to improve the health of the Moroccan population as a whole and to reduce regional disparities and health inequities (Zahidi et al., 2022). • Duran et al. (2020) revealed that the Ivorian government is now revamping the country's healthcare system by shifting to strategic buying funded by a national health insurance program. • Health care in Burkina Faso has been decentralized since 1992. When the country undertook a reform of its health system, this led to the creation of health regions, which are further subdivided into health districts that serve as the ground level for putting the national health policy into action (Zon et al., 2020). • The health sector in Swaziland receives more than 18% of all government spending (Ngcamphalala & Ataguba, 2018). • Ghana seems more dedicated to improving public health. Government health spending rose from US$53 per capita in 1995 to US$60 in 2014 (Adua et al., 2017).

Appendix C: UREC Decision

UNICAF UNIVERSITY

UREC Desision, Version 2.0

Unicaf University Research Ethics Committee Decision

Student's Name: Rasmata Nana

Student's ID #: R1903D7849270

Supervisor's Name: Dr Susan Wasike

Program of Study: UU-DBA-900-3-ZM

Offer ID /Group ID: O36066G37275

Dissertation Stage: DS3

Research Project Title: African Union and the Attainment of 21st Century Health Needs in Africa: The Mediating Role of Governance

Comments: No comments

Decision*: A. Approved without revision or comments

Date: 25-Jul-2022

*Provisional approval provided at the Dissertation Stage 1, whereas the final approval is provided at the Dissertation stage 3. The student is allowed to proceed to data collection following the final approval.

Appendix D: Approved UREC

REAF_DSPA - Version 1.0AP

UNICAF UNIVERSITY
RESEARCH ETHICS APPLICATION FORM
DOCTORAL STUDIES PROVISIONAL APPROVAL

The Provisional Approval - Research Ethics Application Form (REAF) should be completed by Doctoral level candidates enrolled on Dissertation stage 1.

This form is a **provisional approval** which means that the UREC committee has accepted the initial description of the project but this is conditional as changes may have to be implemented following Dissertation Stage 2 and piloting in Dissertation Stage 3.

This is a conditional offer and acceptance of the project needs to be verified and confirmed upon completion of the Research Ethics Application Form in Dissertation Stage 3.

Important Notes:

- An electronic version of the completed form should be uploaded by the student to the relevant submission link in the VLE. Student's supervisor will then review the form and provide feedback commentary. Once supervisor's initial approval is given then the supervisor will forward this to doctoral.studies-aa@unicaf.org, for provisional approval by the Unicaf University Research Ethics Committee (UREC).
- Please type your answers and **do not** submit paper copy scans. Only *PDF* format documents should be submitted to the committee. It is recommended to use free version of Adobe Acrobat Reader available online: https://get.adobe.com/reader/
- If you need to supply any supplementary material, not specifically requested by the application form, please do so in a separate file. Any additional document(s) should be clearly labelled and uploaded in the relevant VLE link.
- If you have any queries about the form, please address them to your dissertation or project supervisor.

REAF_DSPA - Version 1.0

UNICAF UNIVERSITY RESEARCH ETHICS APPLICATION FORM DOCTORAL STUDIES PROVISIONAL APPROVAL	UREC USE ONLY: Application No: Date Received:

Student's Name: Rasmata Nana

Student's E-mail Address: ranana09@gmail.com

Student's ID #: R1903D7849270

Supervisor's Name: Dr. Susan Khasenye Wasike

University Campus: Unicaf University Zambia (UUZ)

Program of Study: UUM: DBA - Doctorate of Business Administration

Research Project Title: African Union and the Attainment of 21st Century Health Needs in Africa: The Mediating Role of Governance

1. **Please state the timelines involved in the proposed research project:**

Estimated Start Date: 01-Apr-2021 Estimated End Date: 31-Dec-2022

2. **The research project**

2a.Project Summary:

In this section please fully describe the purpose and underlying rationale for the proposed research project. Ensure that you pose the research questions to be examined, state the hypotheses, and discuss the expected results of your research and their potential.

It is important in your description to use plain language so it can be understood by all members of the UREC, especially those who are not necessarily experts in the particular discipline. To that effect please ensure that you fully explain / define any technical terms or discipline-specific terminology (maximum 300 words +/- 10%).

The African Union (AU) was established to lead sustainable growth and development in the African Continent by dealing with challenges in health, and other sectors. African leaders have great expectations that the AU would overcome the inefficiencies in the health sector. Despite several successes, the Continent continues to exhibit adverse health outcomes, majorly attributed to inadequate financing, lack of personnel, and poor leadership and management. Poor governance is believed to be one of the factors contributing to AU's failure in the Continent. AU is significant in enabling African continent attain 21st century health needs. Therefore, it is vital to examine AU's successes and failures in promoting health in Africa, with governance as the mediating factor. The research will focus research questions: How does health financing contribute to the 21st Century Health Needs in Africa? How Africa CDC contribute to the 21st Century health needs in Africa? How does access to safe, efficacious, and quality medicine contribute towards 21st Century health needs in Africa? How does the supply of essential medicine in the Continent contribute toward 21st Century health needs in Africa? How can Africa's States governance contribute to the 21st Century health needs in Africa? The study is expected to show that the AU has made some progress or otherwise in promoting health in Africa. The study results will allow to stress any existing governance issue that makes it difficult or otherwise for the AU to fulfill its objectives.

2b. Significance of the Proposed Research Study and Potential Benefits:

Outline the potential significance and/or benefits of the research (maximum 200 words).

The African Union bears significant responsibilities of protecting people's rights in Africa, promoting health, maintaining peace and security, and enhancing economic growth and development. It will be significant to AU in finding out the measures to work on to improve the Health Sector to meet its 21st century needs. It will help determine how much AU has achieved in promoting health in the African Continent. It will help the AU identify opportunities for improvement in the health sector. It will also show how governance in Africa has influenced the performance of the AU in the health sector. This information will be useful for students and other interested persons seeking information about the AU. Besides, it will be the foundation for further research into the AU and its mandate in the region and Africa as a whole. It is necessary to fill this gap by investigating the organization's performance and the contributing factors. It is an appropriate study subject, with Africa facing a huge disease burden, Covid-19 pandemic.

3. **Project execution:**

3a. Type of project. The following study is an:

- [ ] experimental study (primary research)
- [x] desktop study (secondary research)
- [ ] desktop study using existing databases involving information of human/animal subjects
- [ ] Other

If you have chosen 'Other' please Explain:

3b. Methods. The following study will involve the use of:

Method	Materials / Tools
☑ Qualitative	☐ Face to Face Interviews
	☐ Phone Interviews
	☐ Face to Face Focus Groups
	☐ Online Focus Groups
	☑ Other*
☐ Quantitative	☐ Self-administered Questionnaires
	☐ Online Questionnaires
	☐ Experiments
	☐ Tests
	☐ Other *

*If you have chosen 'Other' please Explain:

Secondary qualitative data will be used to address the research questions.

4. Participants

4a. Does the Project involve the recruitment of participants?

☐ YES **If YES, please complete all following sections.**

☑ NO **If NO, please directly proceed to Question 5.**

Note: The definition of "participation" includes active participation, such as when participants knowingly take part in an interview or complete a questionnaire.

4b. Relevant Participant Details of the Proposed Research

Please state the number of participants you plan to recruit, and describe important characteristics such as: demographics (e.g. age, gender, location, affiliation, level of fitness, intellectual ability etc). It is also important that you specify any inclusion and exclusion criteria that will be applied (e.g. eligibility criteria for participants).

Number of participants

Age range From To

Gender ☐ Female ☐ Male

Eligibility Criteria:

- Inclusion criteria: N/A
- Exclusion criteria: N/A

Disabilities: N/A

Other relevant information (maximum 100 words):

Review of secondary data

4c. Recruitment Process for Human Research Participants:

Please clearly describe how the potential participants will be identified, approached and recruited (maximum 200 words).

N/A

4d. Relationship between the principal investigator and participants:

Is there any relationship between the principal investigator (student), co-investigators(s), (supervisor) and participant(s)? For example, if you are conducting research in a school environment on students in your classroom (e.g. instructor-student).

☐ YES ☑ NO

If YES, please specify (maximum 100 words).

5. Further Approvals

Are there any other approvals required (in addition to ethics clearance from UREC) in order to carry out the proposed research study?

☐ YES ☑ NO

If YES, please specify (maximum 100 words).

6. **Potential Risks of the Proposed Research Study**

Are there any potential risks, psychological harm and/or ethical issues associated with the proposed research study, other than risks pertaining to everyday life events (such as the risk of an accident when travelling to a remote location for data collection)?

☐ YES ☑ NO

If YES, please specify (maximum 150 words):

7. **Application Checklist**

Please mark √ if the study involves any of the following:

☐ Children and young people under 18 years of age, vulnerable population such as children with special educational needs (SEN), racial or ethnic minorities, socioeconomically disadvantaged, pregnant women, elderly, malnourished people, and ill people.

☐ Research that foresees risks and disadvantages that would affect any participant of the study such as anxiety, stress, pain or physical discomfort, harm risk (which is more than is expected from everyday life) or any other act that participants might believe is detrimental to their wellbeing and / or has the potential to / will infringe on their human rights / fundamental rights.

☐ Risk to the well-being and personal safety of the researcher.

☐ Administration of any substance (food / drink / chemicals / pharmaceuticals / supplements / chemical agent or vaccines or other substances (including vitamins or food substances) to human participants.

☐ Results that may have an adverse impact on the natural or built environment.

8. Final Declaration by Applicants:

(a) I declare that this application is submitted on the basis that the information it contains is confidential and will only be used by Unicaf University and Unicaf University Research Ethics Committee (UREC) for the explicit purpose of ethical review and monitoring of the conduct of the research proposed project as described in the preceding pages.

(b) I understand that this information will not be used for any other purpose without my prior consent, excluding use intended to satisfy reporting requirements to relevant regulatory bodies.

(c) The information in this form, together with any accompanying information, is complete and correct to the best of my knowledge and belief and I take full responsibility for it.

(d) I undertake to abide by the highest possible international ethical standards governing the Code of Practice for Research Involving Human Participants, as published by the UN WHO Research Ethics Review Committee (ERC) on http://www.who.int/ethics/research/en/ and to which Unicaf University aspires to.

(e) In addition to respect any and all relevant professional bodies' codes of conduct and/or ethical guidelines, where applicable, while in pursuit of this research project.

(f) I understand it is my responsibility to submit a full REAF application during Dissertation Stage 3 to UREC. If a REAF application is not submitted my project is not approved by UREC.

(g) I fully acknowledge that this form does not constitute approval of the proposed project but it is only a provisional approval.

☑ **I agree with all points listed under Question 8**

Student's Name: Rasmata Nana

Supervisor's Name: Dr. Susan Khasenye Wasike

Date of Application: 31-Mar-2021

Important Note:
Please now save your completed form (we suggest you also print a copy for your records) and then submit it to your UU Dissertation/project supervisor (tutor). **In the case of student projects, the responsibility lies with the Faculty Dissertation/Project Supervisor.** If this is a student application, then it should be submitted via the relevant link in the VLE. Please submit only electronically filled in copies; **do not** hand fill and submit scanned paper copies of this application.

☑ **Before submitting your application, please tick this box to confirm that all relevant sections have been filled in and the information contained is accurate to the best of your knowledge.**

Appendix E: Data Analysis Guide

SECTION A: INDEPENDENT VARIABLES

A) HEALTH FINANCING

	Statements	Answers
1	Existence of a proper Health Financing system.	
2	Arrangements made to promote and enhance quality healthcare in the Country.	
3	Required resources available to meet the health needs (services and essentials quality medicines).	
4	Existing sources of revenues to support the healthcare system.	
5	Existence regulation governing services that citizens are entitled to.	
6	List of services/treatments covered by the government.	
7	Existence of private healthcare financing system in place.	
8	pinion on health financing contribution to althcare system.	
O		
9		
10		

B) SUPPLY OF ESSENTIAL MEDICINE

	Statements	Answers
1	List of essential medicines for managing Malaria, Tuberculosis, HIV, AIDS, Diarrhea, COVID19.	
1b.	Domiciliation of the list domiciled if any, Federal, State, or local level.	
1c.	Conditions of these medicines provision.	
1d.	Last update date of the list	
2	Existence of worldwide partners for the supply of medical equipment	
3	Existence of worldwide networks for the supply of medicine.	
4	Frequency of accessibility of new/quality medical instruments	
5	Time taken to access new quality medical supplies (instruments and medicine).	
6	Usof e risk based approaches to reinforce registration efficacy.	
6b.	Constraints of using the risk-based approaches.	
7 A	vailability of robust strengthening and management of the manufacturing regulatory.	
7a.	Impact of the existence.	
7b.	Remedial measure in case of absence	
8	T nsportation modalities instituted to distribute medicine/medical equipment.	
8a.	The alternatives to the chosen model	

9	Centralized procurement and distribution	
10	Availability of local distributors nominated by the government.	

C) ACCESS TO SAFE, EFFICACIOUS, AND QUALITY MEDICINE

	Questions	Answers
1	Availability of Essential medicines availed within the sphere of functioning of health systems at time	
2	Essential medicines affordable to all people regardless of their socio-economic status	
3	Essential medicines availed in sufficient amount	
3b.	which essential medicines not available	
3c.	Duration of shortage of this medicine (s)?	
4	Essential medicines availed in enough quantity, in the proper dosage forms	
5	Essential medicines in assured quality and sufficient information	
6	Government facilitates access to safe, and quality medicines.	
6b.	Manner of accessibility	
7.		

D) AFRICA CENTRES FOR DISEASE CONTROL AND PREVENTION (Africa CDC)

	Questions	Answers
1.	Africa CDC effectively facilitate quick and effective detection, surveillance, and response in countries, and manner	
2.	Africa CDC strengthen the capability and capacity of Public Health institutions in countries and strengthen partnerships to spot and report quickly and efficiently to threats and outbreaks of diseases	
2b.	Method of capacity buiding	
3.	Countries which use African CDC to share and exchange lessons and knowledge from public health interventions with other AU member states	
3b.	Other platforms for exchange of lessons and knowledge with other AU member states	
4	African CDC contributed to the achievement of the existing international health targets and SDGs, UNC, and International Health Regulations.	
5	African CDC contributed to public health emergency preparedness in your country? If yes please explain.	
6.	Country which join AMA (the African Medicine Agency)	
7.	other areas in which he Africa CDC can help countries achieve better health for its citizens	

SECTION B: MODERATING VARIABLE: GOVERNANCE

	Statements	Answers
1.	Country which government formulate strategic (tives and direction of health care system	
1b.	Factor that informs and determines those objectives	
2.	Government monitor and guide the health system to safeguard the public interest in a broader sense than just mere improvement of health status	
2b.	chievement mechanism (parameters used)	
3.	Specific reformes enacted pertaining to governance that ensure capacity building (thorough health professionals' trainings) and ensure equity and access in delivery of care	
4.	Evaluating schemes and frameworks are used in measuring the level of performance while ensuring accountability?	
4b.	other schemes that should be used or that can give better results	
5.	Tools issued to help monitor and evaluate the health system and its building blocks	
6.	Policies developed or enacted that aligns with the SDG's health objectives	
7	public hospitals play leadership roles	
7b.	In volvement of Public hospitals in governance process	

8	Specific reforms that prioritize certain health thematic that needs to be addressed.	
9	Strategic coordination schemes implemented pertaining to health provision.	
9c.	Existing schemes effectiveness	
9d.	Other strategic coordination schemes that can be used	
10	Legal measures and policies are put in place to ensure infant protection in health services delivery	
10b.	Measures suffice for infant protection	
10c.	Other strategic coordination schemes that can be used	