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## Determining Strategies for Cost Effectiveness in Sustainable Healthcare Delivery – An Emerging Market Study

Francis Ikechukwu Igbo  
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# Walden University

College of Management and Human Potential

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Francis Ikechukwu Igbo

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2023

Abstract

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by

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MBA, Milpark Business School, 2010

BMLS, University of Nigeria, 1994

Doctoral Study Submitted in Partial Fulfillment

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Walden University

June 2023

## Abstract

Some South African healthcare managers and physicians find sustaining quality, cost-effective healthcare services challenging. Healthcare leaders are concerned about the high cost of healthcare as it can negatively impact sustainability and patient outcomes. Grounded in the cost-effectiveness theory and complex adaptive system theory, the purpose of this qualitative multiple-case study was to explore strategies some South African healthcare leaders use to sustain healthcare delivery in lower- and middle-income countries. The participants were five healthcare practitioners in rural areas of South Africa. Data were collected through semistructured interviews and secondary data sources. Thematic analysis of the data yielded four themes: patients' low health education, legal and ethical burdens on medical practitioners, low quality of primary healthcare, and individual differences among healthcare workers. A key recommendation is for healthcare leaders to implement telemedicine practices to help lower the cost of medical care. The implications for positive social change include the potential to provide quality, profitable, cost-effective, and sustainable healthcare to the inhabitants of rural communities.

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## Section 1: Foundation of the Study

Effective healthcare interventions may be underutilized by the developing world. This is associated with insufficient system resources, inappropriate allocation of the resources, inadequate system quality, or insufficient household incomes (Kigume & Maluka, 2021). For the primary health worker in a low/middle-income country (LMIC) setting, delivering quality primary care is challenging. This is often complicated by clinical guidance that is out of date, inconsistent, and informed by evidence from high-income countries that disregards LMIC resource constraints and burden of disease (Yau et al., 2019). Demographic and epidemiologic trends in the determination of the cost effectiveness of a sustainable healthcare delivery in an emerging market involve, but are not limited to, the current health system in the emerging market, the functioning of the health financing system, and the goals of the health systems in question. These are considered in terms of the health system in the emerging market, evaluated with its health spending, inputs, outcomes, and financial protections, and compared with an existing market (Ng & Fong, 2022). Based on the above trends and maybe other significant policies such as the present debate on national health insurance in South Africa, analysis of the strengths and weaknesses of the emerging market health systems should then be a baseline for the determination of the cost effectiveness of sustainable healthcare delivery. This would, in essence, provide background information towards determining the strategies for cost effectiveness of a sustainable healthcare delivery system in an emerging market.

## **Background of the Problem**

Determining strategies for cost effectiveness of a sustainable healthcare delivery in an emerging market toward future fiscal space should be modeled on a review of macroeconomic information of a group of lower-middle income earners in an emerging market. This is to ensure a well-structured and operational reform strategies for an effective and long-term healthcare sustainability (Rosenberg et al., 2022) because there seems to be an obvious movement away from a healthcare supply side and financing towards a healthcare demand side and financing. This is in line with previous literature that fundamental improvements and restructuring are needed for healthcare delivery coverage rules, healthcare basic benefit packages, healthcare provider payments, and healthcare delivery cost controls to ensure the efficient use of healthcare delivery resources and bring expenditures into closer alignment with available resources for a sustainable future fiscal space (Asante et al., 2019; Hirshon et al., 2013).

Therefore, a modest increase in government expenditure on healthcare delivery may be a possible resolution from an improved revenue collection measure. Although, in LMICs, revenue collection systems have serious structural and operational inefficiencies from the outset, public resources will be inclusively needed to carry out major reforms (Virk, 2019). However, it may be difficult to argue for major increases in funding, particularly in a very fragile emerging market, and this establishes an informed need for the determination of strategies to improve cost effectiveness of sustainable healthcare delivery in an emerging economy.

### **Problem Statement**

For the past 25 years, there has been an increased quest to achieve quality cost-effective healthcare delivery, to rural and remote populations, that is profitable to healthcare practitioners and sustainable in the long run (Wakerman & Humphreys, 2019). Only about 7% of most developing countries' rural populations (e.g., in China and South Africa) have healthcare insurance and can afford access to healthcare practitioners and, therefore, access to adequate quality healthcare (Han & Tan, 2021; Meng et al., 2019). The general business problem is that some healthcare practitioners lack the ability to provide quality and cost-effective healthcare that is profitable, to rural and remote populations. The specific business problem is that some healthcare practitioners do not understand the strategies required to provide quality, cost-effective, and profitable healthcare delivery to rural and remote populations.

### **Purpose Statement**

The purpose of this qualitative case study was to identify the strategies healthcare practitioners use to improve the mode, quality, and profitability of healthcare delivery to the rural Gauteng region of South Africa. The study was conducted on the healthcare sector in this region. The quality of healthcare offered for rural inhabitants in Gauteng is lower than the quality of healthcare provided to their urban counterparts (Marten et al., 2014). The implication for social change is the belief that low quality, high cost, and unaffordable healthcare delivery, which does not benefit these rural inhabitants, is socially undesirable (Ng & Fong, 2022; Sanders et al., 2016). Regardless, an affordable healthcare system will increase access to healthcare services by the poor, including those

in the remote and rural communities. I used this qualitative multiple-case study to identify approaches that healthcare managers use to support healthcare delivery systems that bring about a social change aimed at lowering healthcare costs and improving quality healthcare delivery to the rural communities. Hence, this study may assist healthcare practitioners in delivering sustainable, quality, and affordable healthcare to the inhabitants of these rural communities, which will improve accessibility to (a) preventative care, (b) regular care for chronic health conditions, (c) medication adherence, and (d) self-reported healthcare; all aimed at achieving a decreased morbidity rate (Okamoto & Komamura, 2022).

### **Nature of the Study**

In this study, I used a qualitative research method to achieve my research objective. A research method is a procedure or technique applied by the researcher to undertake a research study and is comprised of three methodologies: quantitative, qualitative, and mixed methods (Jason et al., 2021). I used the qualitative methodology for this study because it uses open-ended and conversational approach, which allows for in-depth questioning of respondents based on their responses, where the researcher also understands the respondents' motivation and line of thought (Saunders et al., 2015). Researchers employing qualitative methodology seek to explore thick descriptions of meanings in the form of rich data and patterns that define experiences and business processes (McNabb, 2020). On the contrary, quantitative methodology is statistically expressive and uses numbers as the unit of analysis; the scale of the analysis is always large, and the focus of the analysis is on specific variables (McNabb, 2020). With the use

of mixed-method research, though an important methodology to investigate complex health-related topics, the researcher will have to choose meaningful integration or non-meaningful integration of the qualitative and quantitative data (Mulisa, 2022). Therefore, quantitative and mixed methodology was not applicable to this study.

The purpose of this research was to use qualitative methodology to explore, in detail, strategies to improve healthcare delivery. There are five main types of qualitative research design: grounded theory, case study, ethnography, narrative, and phenomenology, and these designs are shaped by differing theoretical and philosophical stances, however, they have in common the use of nonnumerical data and the value in their uniqueness, ambiguity, natural variation, and diversity in the findings (Jason et al., 2021). In a case study research design, the researcher explores in detail a program, an event, an activity, a process of an individual or group of individuals, an organization or groups of organizations to make conclusive and informed decision (Goodrick, 2020). A case study design helps in the exploration of an occurrence within a specific context through various data sources, and it undertakes the exploration through a variety of lenses to reveal multiple aspects of the phenomenon (Massaro et al., 2019). Ethnographic research allows the researcher to collect data by observing members of a cultural group in their natural settings; phenomenological research focuses on the lived experiences and behaviours of humans; while in narrative research, the researcher retells the stories of the participants (Saunders et al., 2015). However, the purpose of this research is not to observe members of a cultural group, focus on lived experiences and behaviors, or retell stories of lived experiences of the participants, but to explore, in detail, strategies to

improve healthcare delivery. In this study, I used a case study research design to explore the participants' understanding and suggestions of strategies to improve healthcare delivery.

### **Research Question**

What are the strategies required by healthcare practitioners in order to provide quality and cost-effective healthcare, that is profitable, to rural and remote populations?

### **Interview Questions**

In this study, I used interview questions to determine the strategies that best suited healthcare delivery in rural low- and middle-income areas. There are different models of healthcare delivery such as nurse care delivery models, telemedicine delivery models, and Markov healthcare delivery model (Havaei et al., 2019). These models of healthcare delivery affect the quality and safety of the outcome of healthcare delivered, as well as the cost effectiveness and profitability of the healthcare delivery process (Havaei et al., 2019). In this study, I used the following interview questions to achieve the research objectives.

1. What mode of healthcare delivery model strategies have you found effective in improving the quality of healthcare?
2. What mode of healthcare delivery model strategies have you found effective in improving the cost effectiveness of the healthcare delivery process?
3. What mode of healthcare delivery model strategies have you found effective in improving the profitability/sustainability of healthcare delivery?

4. What are some of the challenges or obstacles you faced with models of healthcare delivery towards improving quality, cost effectiveness, or profitability of healthcare delivery?
5. What healthcare delivery model strategies have you used to improve quality, cost effectiveness and profitability of healthcare delivery?
6. Are there any healthcare delivery model strategies you tried that failed to improve the quality, cost effectiveness or profitability of healthcare delivery?
7. In your experience, is any of the healthcare delivery model strategies more effective in improving quality, cost effectiveness and profitability of healthcare delivery?
8. Is there anything else you would like to share about healthcare delivery model strategies to improve quality, cost effectiveness, and profitability of healthcare delivery?

### **Conceptual Framework**

In this study, I used the theoretical framework of cost-effectiveness analysis to hypothesize the delivery of quality, cost-effective, and sustainable healthcare to rural communities. The cost-effectiveness analysis framework was earlier expounded by Quade (1967), through mixed-methods research, and later extended to the fields of medicine and healthcare services by Russell et al. (1996) and Sanders et al. (2016). A cost-effectiveness analysis framework involves comparing the relative costs of achieving the same outcome using different activities (Wong et al., 2021). The key concepts underlying the theory are (a) mode, (b) quality, and (c) cost of delivery. In this study, I

used the cost-effectiveness analysis framework to explicitly take a sectorial perspective, where the costs and effectiveness of all possible interventions (i.e., healthcare delivery models) are compared in order to select the mix that sustainably maximizes healthcare quality for a given set of resource constraints. As related to this study, I used the cost-effectiveness analysis theory to support the assumption that mode, quality, and cost of healthcare delivered would affect the profitability of the healthcare delivery process. Therefore, cost-effectiveness analysis as an evaluation tool, was used to compare several interventions in terms of implementation costs and the achievement of the intended end result, in order to attain significant resource optimization.

### **Operational Definitions**

**Cost-effectiveness analysis:** Cost-effectiveness analysis is a theoretical instrument used to compare two outcomes based on the relative costs in order to see which of the two provides the best opportunities for success and quality maximization (Wilcox et al., 2019).

**Cost management:** Cost management is a form of management accounting that allows a business or a project to predict impending expenditures in order to have a chance at appropriately managing the budget; it includes cost estimating and project budget calculation and optimization (Hansen et al., 2021).

**Healthcare delivery system:** A healthcare delivery system is an organization of people, institutions, and resources that deliver healthcare services to meet the health requirements of target populations (Nadeem & Kaiser, 2022).

Quality management: Quality management is the act of overseeing all activities and tasks needed to maintain a desired and acceptable level of excellence (Mukhopadhyay, 2020).

### **Assumptions, Limitations, and Delimitations**

#### **Assumptions**

An assumption is something that the researcher must assume to be the case, even without a proof (Verma & Abdel-Salam, 2019). To create assumptions that deal with straightforward factual information that can be measured or observed directly is better. Assumptions in research include things that the researcher has accepted as true, or at least plausible, as well as what the peers who will read the research, dissertation, or thesis have accepted (Verma & Abdel-Salam, 2019). Some assumptions are analytical; others are based on facts, but they go a step further in making some sort of statement about those facts – perhaps interpreting them, analyzing them, explaining them, or evaluating them (Verma & Abdel-Salam, 2019).

Therefore, since assumptions in research are inferences believed to be true, but not confirmed, this study was guided by the following three main assumptions. Firstly, I assumed that qualitative case study research method and design would be the best research process for this study. Secondly, I assumed that the participants would be available and willing to respond to the questionnaires and answer the interview questions sincerely, fully, and without bias. Thirdly, I assumed that some of the specialists and general practitioners have the ability to deliver quality, cost-effective healthcare to some of the rural communities.

**Limitations**

Limitations in research are elements of a study that are not under the control of the researcher, which may influence the outcomes and inferences of the study (Ross & Zaidi, 2019). There are many possible research limitations that can affect a study, but the first step is to identify any particular limitation that is strong enough to halt the study. Examples of limitations include relative knowledge, funding, and time constraints that affect the research process. Limitations can also be influences that the researcher cannot control, and the researcher is obliged to disclose these influences for the benefit of the research recipients (Ross & Zaidi, 2019).

Qualitative research method of proving hypotheses is a powerful tool, but it does have its limitations since the same person decides on it. These limitations are based on the fact that a hypothesis must be testable and falsifiable, and that experiments and observations must be repeatable. The limitations I have identified that can affect my research include time, cost, and availability of my research participants. However, I can control these limitations, therefore they cannot halt the continuation of my research study.

**Delimitations**

Delimitations are the boundaries a researcher outlines by making sure things do not go beyond the scope of the research project (Barata et al., 2022). However, delimitations are choices made by the researcher, which should be mentioned (Barata et al., 2022). They describe the boundaries that the researcher has set for the research project.

Delimitations in research are set so that the goals of the research do not become impossibly large to complete. Examples of delimitations in research include objectives, research questions, variables, theoretical objectives that the researcher has adopted, and populations chosen as targets to study (Barata et al., 2022). This qualitative case study research is focused on healthcare practitioners in the rural areas of Gauteng, South Africa. This study is only reflective of healthcare facilities in the rural areas of South Africa and other similar emerging markets. The research participants were limited to healthcare practitioners, who own private practices or are at a senior management level in the public healthcare institutions.

I focused my research in South Africa due to the recent proposal by the South African government to adopt universal healthcare coverage, through a national health insurance scheme. However, South Africa is one of the emerging market countries that has recorded high prevalence of HIV, COVID-19, low life expectancy, as well as high maternal mortality ratio (per 100,000 livebirths; Marten et al., 2014). Therefore, it would be interesting to study the cost effectiveness of sustainable healthcare delivery in the country.

### **Significance of the Study**

There is a higher concentration of healthcare delivery services and healthcare practitioners in urban areas compared to rural areas in developing economies such as China and South Africa. However, there is a higher population of inhabitants in the rural areas compared to the urban areas (Blumenthal & Hsiao, 2015). Furthermore, the quality of healthcare offered for rural inhabitants is lower than the quality provided to their urban

counterparts in countries like China (Blumenthal & Hsiao, 2015) and across most of the countries collectively referred to as BRICS (i.e., Brazil, Russia, India, China, and South Africa), including South Africa (Marten et al., 2014). The model of this case study, if critically assessed and meticulously implemented, can be used by healthcare providers to offer better quality and cost-effective healthcare in these rural areas. A better quality and cost-effective healthcare will ensure better disease management for the residents through improved preventative care, regular care for chronic health conditions, medication adherence, and self-reported healthcare.

### **Value to the Business Practice**

The implementation of this study in emerging market economies would require a transformation in the governance of the healthcare system. There would also be a need for reconfiguration of institutions responsible for harnessing funds and procurement of services to the flow of income for improving the efficiency in healthcare services. This is particularly significant in South Africa at the moment of this study, since the government is planning to roll out a national health insurance scheme to provide affordable healthcare for all South Africans (Heunis et al., 2019).

### **Contribution to Effective Business Practice**

Healthcare practitioners need to understand how the policies and procedures they implement in their businesses affect the provision of services to their patients and their business profitability. The goal of this doctoral case study was to explore the strategies required by healthcare practitioners to provide quality and cost-effective healthcare that is profitable, to rural and remote populations. Therefore, successful small healthcare

practitioners design, implement, and maintain business related strategies that facilitate their continued profitable operations in the use of resources, the achievement of quality outcomes, their operational costs, and their mode of operations. Insights gained from this study may provide small healthcare practitioners with methods and tools to craft and improve operational competencies to improve their businesses. New sources of potential patients may arise that would help small healthcare practitioners grow their businesses profitably. Specific operational competencies that could enable small healthcare practitioners to successfully improve both the quality of care and quality of life for their patients may also be revealed in this study.

### **Potential Implications for Positive Social Change**

The implications for positive social change and improvement of business practices are that increased profits among small healthcare practitioners may enable them to offer better services to their patients or to the people who may need their services. Increased profits may also provide for increased pay and incentives to better retain their best employees. More healthcare-related job opportunities and higher-paying jobs in low-income areas may also be available. Those increased profits could also enable small healthcare businesses the opportunity to participate in more community-based charitable organizations such as developing clean water sources or sewage disposal systems for low-income families to benefit both families and their communities, as well as lowering morbidity rates.

## **A Review of the Professional and Academic Literature**

### **Introduction**

In this section, I explored literature on the strategies of cost-effectiveness for a sustainable healthcare delivery. A literature review is a catalyst in the articulation of a researcher's adequate preparation for the research by selecting an appropriate methodology (qualitative case study), which would communicate acquired relevant results (Valverde-Berrococo et al., 2020). According to Fisher et al. (2020), as well as Valverde-Berrococo et al. (2020), a literature review is a critical analysis that defines a line of cognitive presentation of published scholarly works that address or relate to the problem statement, purpose statement, and research question.

Therefore, I present an exhaustive literature review to explore cost-effectiveness strategies for a sustainable healthcare delivery system in an emerging market. The literature I captured in my research was used to provide readers with a background overview and knowledge regarding my research topic, a cost-effective healthcare delivery system that is sustainable in an emerging market. I schematized the literature review into the following subtopics: (a) relevant theories, which include three theories that underpin my study; theory of cost-effectiveness analysis, theory of complex adaptive systems, and the prize theory, (b) healthcare delivery models, and (c) healthcare delivery approaches. Items b and c in this list covered healthcare delivery models and approaches relating to the cost-effectiveness and sustainability of healthcare delivery, especially in the emerging market context.

Some of the healthcare delivery models I explored include (a) routine viral-load monitoring model for healthcare delivery, (b) adherence club model for healthcare delivery, (c) lifetime Markov decision model for healthcare delivery, (d) power analogy model for healthcare delivery, (e) drone model for healthcare delivery, (f) ecosystem model for healthcare delivery, (g) evidence supports model for healthcare delivery, (h) medical home model for healthcare delivery, and (i) telemedicine. In the subsequent subsections, I enumerated my research concepts and healthcare delivery approaches, related to the cost-effectiveness and sustainability of healthcare delivery, the concepts and approaches include (a) universal healthcare coverage, (b) Quality of healthcare delivery, (c) Cost-effectiveness in globalization of quality healthcare, and (d) Using complex adaptive systems as a cost containment tool in healthcare delivery. I sourced the literature that informed my decisions in the synthesis of my study from various peer-reviewed works contained in journals, reports, and seminal books, which enabled me to have in-depth research inquiries. For these inquiries, the most common and primary search terms I used to extract information from the literature were health, healthcare, healthcare delivery, healthcare delivery models/approaches, sustainability of healthcare, cost-effectiveness of healthcare delivery, cost containment tool in healthcare delivery, quality healthcare, and universal health coverage.

Healthcare delivery is a primary contact point for healthcare providers and healthcare consumers (benefiting individuals). Therefore, I searched works of literature based on a glossary for journals on health and healthcare databases like; Emerald Insight, Sage journals, ProQuest Central Science Direct, Google Scholar, Academia, and Health

Science Advisory reports. Textbooks and Department of Health gazettes/reports also included the reference works of literature, which I consulted for this study. My review centered on 221 scholarly resources with 85% within 5 years of expected completion of my doctoral study. The approach and other critically analyzed synthesis I applied in this writing complied with the updated DBA doctoral study rubric requirements with the relevant theories.

### **Applied Relevant Theories**

The purpose of this qualitative case study was to identify the strategies healthcare practitioners use to improve the mode, quality, and profitability of healthcare delivery to the rural Gauteng region of South Africa. To achieve this objective, I reviewed some theories on cost-effectiveness and sustainability, especially in healthcare delivery. Some of the theories relating to cost and sustainability include cost-benefit analysis, cost-effectiveness analysis, and complex adaptive system. Theories of cost-benefit analysis and cost-effectiveness analysis cannot be confused; both are related, have similar objectives and methodologies, but have different meanings and are applied differently in different projects and industries (Bradly, 1999). In cost-benefit analysis, costs are measured, valued in monetary terms to measure the effects of a project (Mishan & Quah, 2020; Umeh et al., 2022). Business analysts discount costs over time to estimate the quantified net benefit of any project under evaluation. In summary, cost-benefit analysis is a decision-making tool to evaluate and select a project that maximizes economic benefit. Cost-benefit analysis is mostly applied in accounting and project management

(Mishan & Quah, 2020), though it has been applied in patient education in an early research study by Bartlett (1995).

Cost-effectiveness analysis, on the contrary, applies when an analyst is either not able or not willing to attach monetary value to a project's benefit. Cost-effectiveness analysis is relevant in the evaluation of projects alternatives on the basis of their costs and effectiveness and not necessarily on their monetary benefits (Bradly, 1999). Cost-effectiveness analysis approach is widely applied in the areas of health, environment, defense, and humanitarian project evaluations (Bradly, 1999). The fundamental theory of cost-effectiveness analysis is that, though a project or an investment under evaluation can be expressed in monetary values, its assessment is not based on monetary value alone, but on some qualitative attributes that determine its effectiveness (Bradly, 1999).

My study is on the effectiveness and sustainability of healthcare delivery in an emerging market economy, focusing on resource usage, quality outcomes, cost of operations, as well as mode of operation, which determines the sustainability of a healthcare delivery system. My study is not about measuring monetary benefits of healthcare delivery; therefore, the theory that best underpins my study is the theory of cost-effectiveness analysis. In similar studies on health evaluations, both early and recent researchers have applied cost-effectiveness analysis theory (Rojas-Gómez et al., 2022).

Some researchers postulated that the cost-effectiveness analysis framework provides decision makers with an outline for systematic evaluation of implications of resource allocation in the healthcare delivery system (Sanders et al., 2016). For instance, Russell et al. (1996) extensively analyzed the role of cost-effectiveness analysis in health

and medicine research. They posited that, though cost-effectiveness analysis might not reflect the level of its importance in healthcare decision-making, the information it provides is very valuable to make informed decisions on allocation of healthcare resources. Hence, Wong et al. (2021) stressed the importance of increasingly applying cost-effectiveness analysis framework on all levels of decision-making process in the healthcare service delivery.

### **Theory of Cost-Effectiveness Analysis**

Most people practice and carry out cost-effectiveness analysis, from a household attempting to run a home based on a fixed budget from a fixed salary, to an organization (e.g., educational, healthcare, defense force, or humanitarian) that must effectively deliver a required service within an underlined budget. Cost-effectiveness analysis is an ancient theory. This theory started when man first realized the need to avoid an underestimation of costs and/or an overestimation of benefits (Quade, 1967). This theory did not gain popularity in literature until the late 1960s, when the United States of America held closed sessions, discussing the merits of detailed cost-effectiveness analysis on safeguarding programs during World War II.

According to Quade (1971), cost-effectiveness analysis along with other system analysis (i.e., cost-benefit analysis, policy analysis, operations analysis, and management analysis) seeks to provide advice to enable someone or an organization to make an informed decision to achieve a desired goal. Cost-effective analysis theory embodies this role by comparing actions that might simultaneously affect both cost and effectiveness in the process of achieving the goal. The costs (mostly the social opportunities forgone)

incurred are less represented in monetary units; however, the effectiveness presents more of the problems forgone during the process. This scenario best applies in the healthcare service delivery, where in as much as we consider profitability, the satisfaction and improvement of the average patient should be a priority during resource allocation. The shortfall of cost-effectiveness analysis is that it enables comparison of alternatives for achieving a goal, but it cannot be used to compare different tasks to decide overall use of money or to decide which task is more beneficial monetarily (Quade, 1971). This shortfall is not applicable in healthcare service delivery where the focus of an analyst is on the effectiveness of the alternative to improve quality of service and sustainability of service, rather than monetary improvement. Where monetary comparison is the optimum, cost-benefit analysis is therefore more applicable.

Based on cost-effectiveness theory, therefore, I argue in this study that if cost is effectively utilized, healthcare service delivery will improve, leading to patients' satisfaction; in turn will lead to profitability in healthcare service delivery. Rojas-Gómez et al. (2022) postulated that cost-effectiveness analysis can be applied in prioritization of healthcare programs. This will help policy makers to determine areas where funding is needed most to facilitate sustainable healthcare delivery. Interestingly, some researchers, Wong et al. (2021) argued that not only does cost-effectiveness analysis theory facilitate health policy decision making, and contribute to effective allocation of resources, the theory also directly relates to the financial and scientific measures of different interventions, as was the case with the COVID-19 intervention measures during the height of the COVID-19 pandemic, giving clearer understanding of their sizes and levels

of importance. Familiar health matrices used by analysts to measure cost-effectiveness include cases of disease, quality adjusted life years, number of lives saved, and death prevented. This interesting argument is in line with my argument in this study, that with effective utilization of cost, the interventions derived from such effectiveness will be a contributor to profitability in healthcare service delivery in emerging market healthcare systems.

Another aspect of cost-effectiveness theory that underpins my research is the four key constructs (trends) that underline the development of the theory. According to Quade (1967), cost-effectiveness analysis has four trends (framework) that underline its operation and analysis. This framework of cost-effectiveness analysis involves comparing the relative costs of achieving the same outcome using different activities (Wong et al., 2021). The trend/framework includes (a) computerization, (b) mathematical judgment, (c) use of expertise, and (d) implementation of processes. Computerization applies to the ability of the analyst to converse directly with the mechanism of the analysis, which holds the most promise to an effective cost analysis. Mathematical judgment is the intuitiveness of the analyst to guide both the quantitative and non-quantitative aspects of the analysis, especially when it has to do with social context, like healthcare service delivery. The use of expertise involves the interactive procedures to be applied by the analyst in the process of stimulating and filtering opinions of respondents during the cause of gathering information that will be analyzed to arrive at a conclusion. Finally, implementation of process has to do with the analyst facilitating the findings of the study

by examining and exploring the potential effectiveness of the research findings and recommendation in the field.

In this study, I utilized these four trends of the cost-effectiveness analysis framework to explore strategies that will improve the cost-effectiveness of possible interventions in the healthcare service delivery of an emerging market (South Africa). The interventions (frameworks) that I analyzed include (a) mode of operation, (b) quality-adjusted outcomes, and (c) cost effectiveness. These elements were explored to select the mix of strategies that sustainably maximizes the quality of healthcare delivery and also profitable to the healthcare practitioner.

### **Theory of Complex Adaptive System**

Complexity theory is relatively new and cuts across multiple disciplines. Complexity originates from interrelationship, interaction, and interconnectivity of elements, agents, group of systems, or body of systems, within and between the system and its operating environment (Turner & Baker, 2019). Complexity theory emerged in the mid-late 20th century across multiple disciplines (Hidalgo, 2021). Consequently, complexity theory cuts across a wide range of disciplines in the physical, biological, and social sciences, and has philosophical implications on the way we think about and act within the environment (Turner & Baker, 2019).

Many natural systems (e.g., immune systems, ecology systems, and brain system) and many artificial systems (e.g., computers systems, health systems, and artificial intelligent systems) are characterized by collections of individual agents, actors, or components in the system whose complex behaviors emerge spontaneously while

reacting to their environments. The agents or components (people) act spontaneously to understand the unpredictable aspect of the environment while working with a dynamic organization (Penney et al., 2018). These systems are referred to as complex adaptive systems. Complexity theory explains how an organization as an ecosystem responds to natural laws and policies while finding the best possible solutions to existing problems (Hidalgo, 2021). This theory is particularly important in the study of organization, organizational dynamism, and provides insight on how organizations become more innovative, adaptive, and sustainable due to interactions between the agents of the system (i.e., the organization; Turner & Baker, 2019). The theory allows one to focus on the interconnectedness and interaction of the agents and their effects on effectiveness and sustainability, rather than studying individual agents in isolation.

Healthcare organizations have been extensively studied as complex adaptive systems (Gossett et al., 2019). Many researchers have contributed to the understandings of the importance of interdependencies, interconnectivity, and interactions among different agents of the healthcare system (Penney et al., 2018). Healthcare organizations are complex systems with multiple agents of various types, including various patients with diverse medical needs, diverse group of medical professionals, and even the healthcare stakeholders (Ratnapalan & Lang, 2020). Complex adaptive system theory enables one to understand both the complexity of behavior/actions of those agents involved in healthcare delivery, and the difficulty in predicting which of the actions will likely contribute to success (Penney et al., 2018).

Therefore, in this study I deployed the complex adaptive system theory to determine which strategy/intervention due to their interactions among healthcare agents that relate to cost-effectiveness and sustainability of the healthcare service delivery. The concepts I explored include mean resource use of healthcare facilities, quality-adjusted outcome of healthcare delivery, operational costs of healthcare, and the mode of operations in the healthcare system. My intention to deploy complex adaptive system theory is in line with Ratnapalan and Lang's (2020) assertion that being cognizant of and appreciating the complex nature of the healthcare system is essential in managing healthcare organizations, in order to achieve optimal outcomes.

The cost-effectiveness and sustainability of the healthcare delivery could directly or indirectly be affected by the complex nature of the system. This implies that the approaches applied in the use of healthcare resource, quality-adjusted outcome of healthcare delivery, operational costs of healthcare, and mode of operation in the healthcare system have an effect on the cost-effectiveness of a sustainable healthcare delivery system. Therefore, in this study I compared and analyzed the above-mentioned strategic interventions in order to select the strategy or the mix of strategies that sustainably maximizes the quality of healthcare delivery as a complex system, in an emerging market, focusing on South Africa.

### **The Prize Theory**

The concepts of economics can be applied to every aspect of human activity, including healthcare. However, the price characteristic within healthcare does not function as it does in other sectors of the economy (Jaffe et al., 2019). According to Jaffe

et al. (2019), the theory of price is an economic theory that states that the price for any goods and services is determined by economic forces such as supply, demand, cost, and competition. According to this theory, the relationship between supply and demand influences price - prices should rise if demand exceeds supply and fall if supply exceeds demand.

This study examined the price theories of capitalism and socialism to elucidate the purpose of price relevance within the healthcare industry. In a capitalist economic system, the requirement that the capitalist natural price must first be determined makes the prize theory non proportionate within the healthcare system. This distinctive feature of the prize theory and the concepts of healthcare pricing and prioritization indicate that moral principles must guide the economics of healthcare, not merely supply and demand (Babcock, 2019). According to Babcock (2019), in the healthcare sector, the prize patients pay for the same healthcare services differs from one individual to another, even though the costs to perform those services are the same. Due to these procedural discrepancies, the prize theory may not be aligned to healthcare.

### **The Healthcare System**

According to extant literature, the rural populations of emerging market economies may experience a lower quality of healthcare delivery than their urban counterparts. This is because the environment in which people are born, grow up, and live influences their health status and accessibility to adequate healthcare; societal risk conditions, inadequate housing, and sanitation play roles in determining the cost-effectiveness of a sustainable healthcare delivery (Jones et al., 2019; Kuddus et al., 2020;

Maphumulo & Bhengu, 2019), especially in an emerging market economy like South Africa. However, a sustainable healthcare delivery system is achieved when healthcare practitioners deliver high-quality care and improved public health without exhausting available resources or causing severe ecological damage (Gupta & Wood, 2019).

Therefore, there is a need for a study on purposeful cost-effectiveness of a sustainable healthcare delivery system in an emerging market. This need forms the core objective of this qualitative case study with critically relative approaches to healthcare delivery usage, practice, procedure, treatment, and management in an emerging market economy.

Economic analysis of an emerging market can reflect an actual value of available healthcare delivery resources rather than just a simple application of unit costs. Several researchers recommended effective models and interventions that could realistically challenge the actual values of the possible healthcare delivery resources, which are severely underutilized or not used at all in the emerging market economies (Adugna et al., 2020; Wang et al., 2019). Insufficient household incomes, inappropriate resource allocations, scarce system resources, and poor system quality could be factors to consider relative to the severe underutilization of resources as reviewed in extant literatures (Adugna et al., 2020).

In most of the works of literature I reviewed, I observed a typical pattern amongst researchers, which had to do with characteristics like health, healthcare, and healthcare delivery model. The researchers often referred to rural and urban healthcare, healthcare models, sustainability/maintainability, cost-effectiveness and/or profitability, government interventions, policies, and implementations. Theorists substantiated these characteristics

with economic times in emerging market economies of the world, with a focus on the relationship between affordability and rural/urban healthcare delivery (Jones et al., 2019; Kuddus et al., 2020). This may be seen differently amongst urban inhabitants (approximately 49%) of developing economies like China's metropolis protected against the cost of healthcare delivery by their healthcare insurance (Ying et al., 2020; Zhou et al., 2022). These urban inhabitants can afford adequate quality healthcare, while only 7% of their rural counterparts have healthcare insurance (Blumenthal & Hsiao, 2015; Ying et al., 2020). According to Marten et al. (2014) and Jakovljevic et al. (2022), this assertion is consistent across all BRICS countries. The general business problem is that some healthcare practitioners lack the ability to provide quality and cost-effective healthcare that is profitable, to rural and remote populations. The specific business problem is that some healthcare practitioners do not understand the strategies required to provide quality, cost-effective and profitable healthcare delivery to rural and remote populations.

The current healthcare delivery in emerging market economies, the functioning of the healthcare delivery financing, and the goals of the healthcare delivery systems in question are determinants of the cost-effectiveness of a sustainable healthcare delivery in an emerging market, bearing in mind the demographic segmentation measures and epidemiologic trends. These measures and trends were explained in terms of the healthcare delivery system in the emerging market, evaluated with its healthcare delivery spending, inputs, outcomes, and financial protections, and compared with other existing markets (Blumenthal & Hsiao, 2015; Jakovljevic et al., 2022). I can then theorize that the measures and trends form the baseline for the strengths and weakness of the emerging

market healthcare delivery systems towards the determination of cost-effectiveness of sustainable healthcare delivery. These may not be significantly played out without meaningful strategies and policies that would provide a base for effective operational costs as it is with the debates on the National Health Insurance Scheme presently promulgated in South Africa.

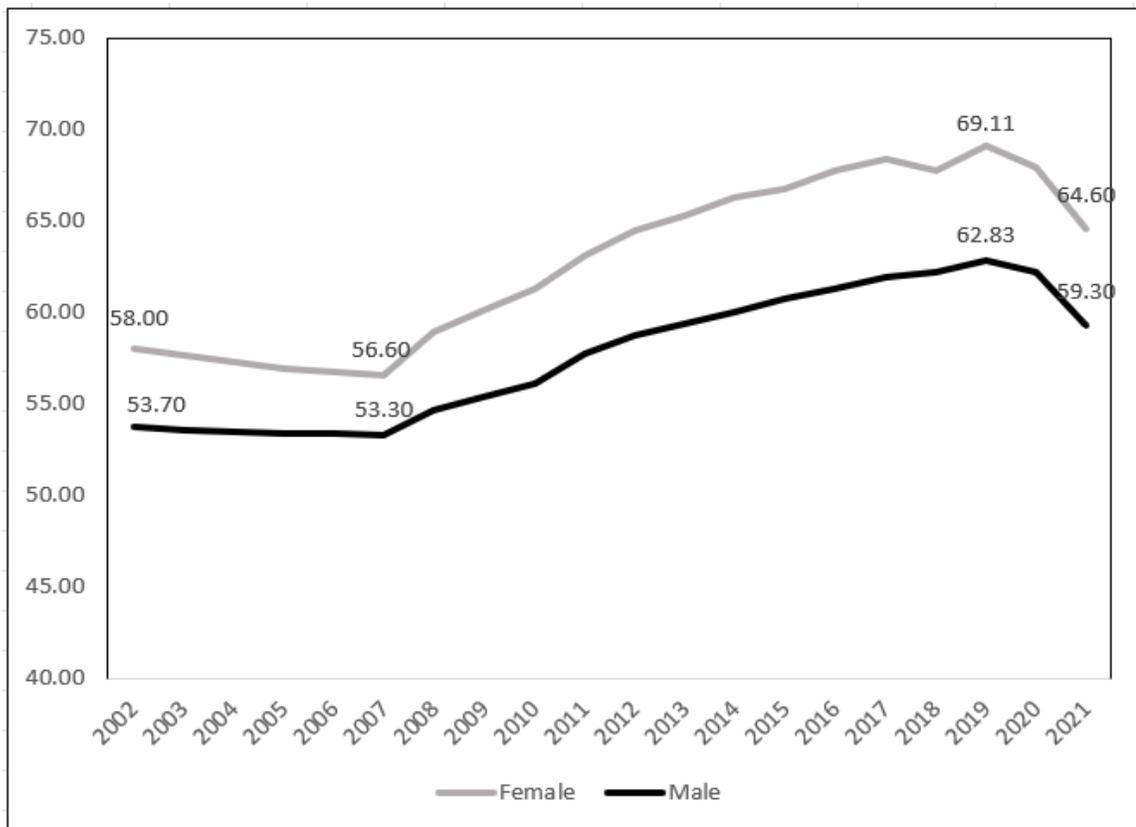
### **South African Healthcare System**

The South African healthcare system ranges from basic primary healthcare to highly specialized healthcare offered by both public and private healthcare providers. While the public healthcare serves the vast majority (about 84%) of the population, it is chronically underfunded, short-staffed, and undermined (Booyesen & Gordon, 2020). Though the government contributes approximately 40% of all expenditure in the public healthcare sector, the sector is under pressure to deliver services to about 84% of the population that access the healthcare; meanwhile, only about 54% satisfactorily access the public healthcare facilities in the country (Booyesen & Gordon, 2020). However, the private healthcare sector is largely accessible by middle- and high-income earners, who are largely covered by private medical insurance providers (Harris et al., 2011). Despite the existence of the two-tiered healthcare system, South African healthcare remains intensely segregated; the public healthcare sector has suffered poor management and waning infrastructures (Harris et al., 2011; Marten et al., 2014). Notwithstanding that access to healthcare facilities must have improved, the quality of healthcare has not improved, but fallen, especially in the poor and rural parts of the country (Booyesen & Gordon, 2020).

Although the life expectancy in South Africa has increased from 53 years in 2011, to 58.5 years in 2014, and to about 65 years in 2019, the HIV prevalence in adults increased from 17.3% in 2011 to 19.07% in 2019; also the total population of adults with HIV stood at 7.97 million, which has been on the increase since 2002 (see Figures 1 and 2). The deteriorating health issue in South Africa is compounded by the COVID-19 pandemic and other public health challenges, which includes burden of diseases such as HIV and tuberculosis (TB), as well as shortage of key medical professionals. HIV prevalence in South Africa still remains high compared to other BRICS member countries (Marten et al., 2014) (see Figure 3), also the country's total population with HIV has been on the increase over the past ten years. All these challenges, put a burden on the government to meet up with fundings and maintenance of the healthcare system, especially the public healthcare sector.

**Figure 1**

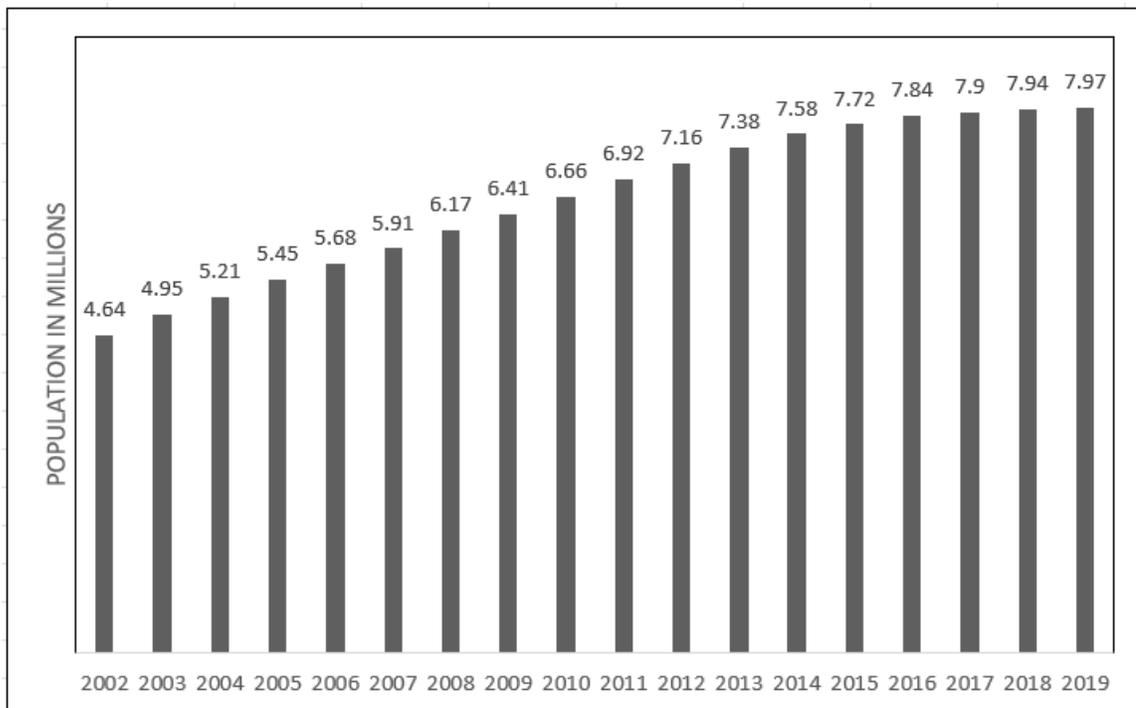
South African Life Expectancy Over Time 2002-2021



Adapted from 2019 Mid-year Population Estimates by C. Munthree, Statistics South Africa, 2019 (<https://www.gov.za/speeches/2019-mid-year-population-estimate-29-jul-2019-0000>).

**Figure 2**

South African HIV Prevalence by Selected Age Groups, 2002–2019



Adapted from 2019 Mid-year Population Estimates by C. Munthree, Statistics South

Africa, 2019 (<https://www.gov.za/speeches/2019-mid-year-population-estimate-29-jul-2019-0000>).

### Figure 3

#### Key Health Indicators Across BRICS Countries

	Brazil	Russia	India	China	South Africa
Life expectancy (Year, 2011)	73	70	65	73	53
Maternal mortality ratio (per 100 000 livebirths, 2010)	56	34	200	37	300
Under-5 mortality rate (per 1000 livebirths, 2011)	14.4	10.3	56.3	14	44.6
Prevalence of HIV in adults aged 15-49years (% , year)	0.3% (2011)	0.8-1.4% (2011)	0.3% (2009)	<0.1% (2011)	17.3% (2011)
Physicians density (per 1000 population, year)	1.76 (2009)	4.3 (2006)	0.65 (2009)	1.46 (2010)	0.79 (2011)
Probability of dying between ages of 30 and years from any of cardiovascular disease, cancer, diabetes, or chronic respiratory disease (% , 2008)	20%	32%	27%	21%	27%
<b>BRICS= Brazil, Russia, India, China, and South Africa</b>					

From “An Assessment of Progress Towards Universal Health Coverage in Brazil, Russia, India, China, and South Africa (BRICS)” by R. Marten, D. McIntyre, C. Travassos, S. Shishkin, W. Longde, S. Reddy, and J. Vega, 2014, *The Lancet*, 384(9960), pp. 2164–2171 ([https://doi.org/10.1016/S0140-6736\(14\)60075-1](https://doi.org/10.1016/S0140-6736(14)60075-1)). Copyright 2014 by Elsevier.

Differences in race, socioeconomic status, and rural-urban differentials are still associated with access to healthcare. In addition to the increased HIV and TB prevalence in the country, which directly or indirectly contributed to low life expectancy compared to other BRICS countries, South Africa’s apartheid past still defines the healthcare service and resource inequities in the country (Weimann & Oni, 2019). With the poor and rural inhabitants without healthcare insurance (which are mostly black South Africans) experiencing barriers to access to healthcare services, and between the public and private health sectors (Harris et al., 2011), these poor groups receive lower rate of healthcare service (Maphumulo & Bhengu, 2019) and receive lesser benefits from the care (Maphumulo & Bhengu, 2019), despite the fact that the burden of ill health is more on

them due to their socio-economic status (Neely & Ponshunmugam, 2019). With these barriers to healthcare, especially to the poor, there is also a massive shortage of healthcare service providers in the country and an uneven distribution of healthcare services between sectors and geographical areas (Marten et al., 2014). According to Malakoane et al. (2020) in their study Public health system challenges in the Free State, South Africa, the major public healthcare system challenges reported by respondents include disintegration of the healthcare services, shortage of healthcare staff, as well as some financial glitches. Therefore, for government to address health challenges, it is essential to improve integration and address shortages of human and financial resources in the health system.

Despite all these challenges, the South African government, in line with the National Development Plan (NDP), is continually responding with some healthcare reforms to rejuvenate and restructure the South African healthcare system. Some of the reforms include intensifying the fight against HIV and TB, and other non-communicable diseases. Contending HIV and Aids remained the South African government's priority in the health sector until the emergence of the COVID-19 pandemic. The government has committed to the 90/90/90 targets of the Joint United Nations Program on HIV and AIDS (Euvrard et al., 2019). This program targets diagnosing 90% of people with HIV; 90% of those diagnosed commenced antiretroviral treatment, and the viral loads of those on treatment have suppressed by 90%. Also, under the same program, the number of people receiving the antiretroviral treatment should be increased from 4.3 million in 2018 to 7 million in 2021/2022.

Other healthcare reforms launched by the government include: stimulating public healthcare facilities, strengthening human-resource management in public hospitals, provisioning of affordable healthcare by regulating hospital fees and charges, reinforcing a coordinated relationship between the public and private health sectors, and most importantly, improving life expectancy from 57 years 2009 to 58.5 years in 2014, and further increasing to 65 years in 2019 (see Figure 1). One of the major reforms is the proposed and fast tracking of a universal healthcare coverage, under the National Health Insurance Scheme, which the government has presumed will cover all South Africans' healthcare cost, when implemented.

However, research has shown that there may be quality improvement programs that had been proposed, initiated, implemented, adjusted, modified, tried, and then established by the government. Nonetheless, such programs did not produce the required level of quality service delivery as desired (Maphumulo & Bhengu, 2019). This argument of inefficient performance of some government intervention programs is in line with a study by Ned et al., (2017), on “experiences and challenges faced by rehabilitation community service therapists”. They argued that South Africa's health outcomes remain below what is anticipated from the current health expenditure in 2015 (though there were few positive changes, like increase in life expectancy). Also, Oksiutycz and Azionya (2022) posited that the Government of South Africa seemed to have under delivered the quality of healthcare as promised in some of their programs. According to Heunis et al. (2019), majority of patients remained unsatisfied with the healthcare services provided by the government, while government claimed to be providing quality healthcare. Therefore,

the present government of South Africa is promulgating the establishment of the National Health Insurance Scheme, out of concern for determining a cost-effective and sustainable healthcare delivery and mitigating some discrepancies within its healthcare systems.

The National Health Insurance Scheme aims to ensure access to healthcare quality service (provided both by private and public health sectors) to all citizens and residents of South Africa. This will help eliminate financial barriers to healthcare access, and in turn increase life expectancy, as most people especially the poor will have increased access to healthcare services. Through the National Health Insurance Scheme, the NDP expects the life expectancy of South Africa to be at 70 years by the year 2030, as well as drastic reduction in the population of youth living with HIV, and the infant mortality rate reduced to less than 20 deaths per 1000 live births (Britnell, 2015). The National Health Insurance Scheme is currently estimated to necessitate an expenditure of about R 336 billion (Britnell, 2015) with the proposed speculation of a single National Healthcare Insurance Fund (NHIF) for healthcare insurance. There are expectations that the fund would pull its revenue from taxes and health insurance contributions for the healthcare equipment purchase and service provision in order to provide healthcare for all South Africans.

However, while the proposal for the National Health Insurance Scheme is waiting to be detailed, outlined, and released because of some pending concerns, there are those whose state may prevent them from realizing the needed services. Some oppose the fundamental techniques of National Health Insurance Scheme healthcare delivery scheme and claim that it is unfounded and at the detriment of the privileged minority, who can

afford the private healthcare delivery system. There are also concerns from the existing private health insurance providers that they may lose their already built business models (Marten et al., 2014).

With all the under performance of the South African healthcare system, though there are some already existing healthcare reforms in progress, there is a challenge. According to Maphumulo and Bhengu (2019), the Government of South Africa still has the challenge to ensure that implementation of the proposed National Health Insurance Scheme will deliver the desired health outcomes, because achieving a lasting quality healthcare system has been proven to be a difficult challenge. Therefore, in this study, I argue that, for a sustainable healthcare delivery in an emerging market like South Africa, various healthcare delivery models could be exploited towards a more determined cost-effective healthcare delivery that could also apply to the National Health Insurance Scheme as relative to the public healthcare sector in South Africa and the patients in general.

### **Case for Healthcare Delivery Models**

Fundamental healthcare delivery models and approaches are needed in the healthcare industry in determining cost-effectiveness that is sustainable and to attain basic healthcare delivery coverage across all strata of the population. These are inclusive of basic healthcare benefit packages with a healthcare payment provider. These also includes the total control costs of healthcare delivery for efficient use of healthcare delivery resources to bring expenditures into closer alignment with available funds for a sustainable future fiscal space (Hirshon et al., 2013). Due to the importance of quality

cost-effective healthcare for poor communities, researchers and healthcare practitioners will always try to determine the cost-effectiveness of sustainable healthcare delivery models for future fiscal space in emerging market economies. This consideration will enable well-structured and operational reform options that are effective in the long-term, mostly for macro-economic information of lower-middle-income earners (Rosenberg et al., 2022). This is because of the rapid movement away from a healthcare supply-side and financing towards a healthcare demand-side and funding. Hence, sustainable models with modest increases in government disbursements into healthcare delivery may be a possible resolution from an improved revenue collection perspective (Aydan et al., 2022; Moro Visconti et al., 2019). Although in low middle-income countries, such as South Africa, revenue collection systems have severe structural and operational inefficiencies from the outset, therefore, public resources will be inclusively needed to carry out significant reforms (Owusu et al., 2021; Virk, 2019). However, it may be difficult to argue for substantial increases in funding, particularly in a very fragile economy, like an emerging market, this assertion establishes an informed need for various healthcare delivery model approaches to determine a sustainable cost-effective intervention.

### **Healthcare Delivery Model Approaches**

Healthcare delivery and its effectiveness has been studied using several models. Most importantly, models for advancing new methods and for improving the use of cost-effectiveness analysis in healthcare delivery have been put forward by many scholars (Flämig et al., 2019; Glass et al., 2019). In this study, I considered identifications in areas for which researchers and healthcare practitioners believed that future healthcare delivery

models would be predominantly successful. Furthermore, outstanding models in each of these areas have not been considered as exhaustive but rather a set of critical elements that are well articulated towards a sustainable healthcare delivery. Nonetheless, the models considered in this review are briefly enumerated below.

### **The Routine Viral-Load Monitoring Model for Healthcare Delivery**

The WHO-HIV Treatment Guideline is a healthcare delivery model that introduced a routine viral-load monitoring technique. The WHO HIV Treatment Guideline on routine viral-load monitoring is used in the differentiation of antiretroviral therapy delivery that reduced the frequency of clinic visits for patients on antiretroviral therapy (Glass et al. (2019). An economic analysis of the study that showed the model approach is very likely to be cost-effective, even in the most resource-constrained setting, led to the above recommendation. The advocates of this model showed that attributed health benefits could be unassertive, and still, the costs of introducing and scaling up viral load monitoring can be offset by anticipated reductions in costs of clinic visits, due to the reduced frequency of the visits. The authors also revealed that the cost-effectiveness of introducing viral-load informed differentiated care depends on whether cost reductions are possible if there is a reduction in the number of clinic visits and how freed clinic capacity can be used for alternative priorities.

With the results from the model, the authors guided conditions under which viral load informed differentiated care will prove to be more likely cost-effective when implemented. Although the authors focused the model on viral load-informed differentiated care for individuals receiving HIV treatment, however, implications of unit

costs not necessarily reflecting the health opportunity costs of non-financial resources are wide-ranging in other forms of healthcare. This gap promotes the call for an adherence club model in order to encourage expansion and stability control.

### **Adherence Club Model for Healthcare Delivery**

The adherence club model is one such differentiated model designed for patients on a stable medical care. However, it is most evident in patients on antiretroviral treatment (Flämig et al., 2019). Flämig et al. (2019) advances on this model was to extend the support in quality antiretroviral therapy delivery to reach a sustainable, cost-effective level, while implementing the adherence club model across South Africa. Healthcare practitioners used this model to rapidly scale up health district's antiretroviral treatment cohorts, converting about 90% of antiretroviral treatment patients into receiving healthcare at a close facility offering the Adherence Club model. The model also led to increased patients' volume to + or -120 000, with adherence club scale up accounting for half of the cohort growth (Finci et al., 2020). According to Finci et al. (2020), the acceptance of this model approach and its immediate feasibility reflects in the scale-up, the proportion of patients accessing antiretroviral and the total adherence club size, and location to better suit their context and resources. In turn, this adjusted upwards the number of eligible patients, in the minimum duration of time, on antiretroviral treatment. This represents a paradigm shift on how antiretroviral therapy delivers an improved cost that is effective and sustainable. Therefore, according to Finci et al. (2020), further adaptations and additional resources will be needed to transition to a more significant proportion of the cohort. To yield effective decongestion of primary

healthcare facilities that is sustainable and cost-effective, this transition would require enough stable patients to be removed from routine clinician led care. However, this cannot be achieved with existing resources as patient numbers continue to grow.

However, while the adherence club model is aimed to decongest healthcare facilities, provide sustainable and cost-effective healthcare delivery in an emerging market, its principal objective was to improve the patient experience of long-term antiretroviral treatment care with the sense of increased lifetime expectancy.

### **The Lifetime Markov Decision Model for Healthcare Delivery**

The lifetime Markov decision model was developed according to the disease course of diabetic kidney disease (DKD). This model was developed by Wu et al., (2018). The aim is to assess the success of preventing DKD in newly diagnosed patients with type II diabetes from the Chinese healthcare delivery assessment. The World Health Organization indicated that DKD is the second leading cause (16.4%) of end stage renal disease in China (Huang, Xu et al., 2019). Wu et al.'s study indicated that clinical stages of DKD are generally classified in two phases based on the values of urinary albumin excretion. Wu et al. further indicated that patients with newly diagnosed type II diabetes were made to receive treatment according to one of the following three strategies: (1) “do nothing” strategy (control strategy), (2) treatment with angiotensin converting enzyme inhibitors and angiotensin II receptor blockers (universal approach), or (3) screening for microalbuminuria followed by angiotensin converting enzyme inhibitor/angiotensin II receptor blocker treatment (screening strategy).

The authors also used the clinical and utility data obtained from the published literature for critical analysis to test the impact of a range of variables and assumptions and to consider direct medical cost-effectiveness and resource utilization in the Chinese healthcare delivery setting. Compared with the control strategy, both the screening and universal procedures were cost-saving options, which showed lower costs and better health benefits. The incremental cost-effectiveness ratio of the comprehensive plan over the screening strategy assessed at \$30,087 per quality adjusted life year was higher than the cost-effectiveness threshold of China (Wu et al., 2018). The authors found that a sensitivity analysis showed robust results, except for the probability of developing macro albuminuria from microalbuminuria. The likelihood for developing macro albuminuria from microalbuminuria was the most influential factor for clinical and economic outcomes, showing that early detection and intervention are cost-effective measures, offsetting costs through reducing the disease burden related to DKD.

### **The Power Analogy Model for Healthcare Delivery**

The power analogy model approach reveals that healthcare pipelines may be organized through a time space matrix. Towill and Christopher (2005) demonstrates that this model may be used to achieve a cost-effective and sustainable healthcare delivery in patients' self-care diagnostics and treatments. They further showed that material flow concepts developed and applied to healthcare products and healthcare services can bring an equally satisfactory base towards a productive and sustainable healthcare delivery system. Improved cost-effective target-based immunization and surveillance using this model are experienced in the certification of South Africa as a polio-free status country

by WHO's African Regional Certification Commission (Towill & Christopher, 2005). The implication is that the use of conventional unit costs to value resources may well reflect the values in contributing to health improvement. Therefore, applying the model approach reaches many substantively different healthcare delivery channels, covers massive patients' healthcare needs, and creates fair extra value from the patient's viewpoint (Buchbinder & Shanks, 2017). The model is accomplished as a total process planning and analysis by conventional identification techniques. The healthcare delivery channels must be adequately complemented by life cycle phases, life patterns, housing patterns, societal risk conditions, sanitation, and healthcare status if the services are to be active. Therefore, resource allocation decisions in several settings may have to be interpreted, by healthcare practitioners, with due consideration of indigenous contexts.

### **The Drone Model for Healthcare Delivery**

The use of technological smartphones has allowed developed and developing countries to advance technology in communication. This development is also extended to the field of healthcare delivery using drones (Rashidzadeh et al., 2021). This is also applicable in the use of drones to advance sustainable and cost-effective healthcare delivery in an emerging market setting, as this can change the current traditional emergency healthcare response system. Drones are flying machines, which don't have a pilot and different tasks can be performed in a controlled way from a distance (Scott & Scott, 2020). Scott & Scott (2020) developed a drone model that suggests a potential that does not have the same effect compared to traditional transportation. The drone model approach would, in turn, facilitate more timely, efficient, and economic healthcare

delivery to potentially save lives and bring sustainability into the emerging market space. The methods of how economic analyses and values can reflect the real value of healthcare delivery via the drone model approach was slightly more impactful than directly applying their unit costs.

### **The Ecosystem Model for Healthcare Delivery**

Healthy lifestyle has captured the attention of many due to emergence of and widespread of chronic disease. However, current widespread disregard for healthy lifestyle choices among people living in a particular ecosystem leads to increased rates of obesity and other chronic diseases (Winter et al., 2019). The US healthcare statistics suggest that the US population with chronic diseases, including obesity and diabetes, account for over 70% of the total medical expenditures in the US (Currie & Duque, 2019). The shift from healthcare providers' care to a community centered information-enabled self-management can improve the cost-effectiveness of caring for diseased and chronic patients. This approach may deliver better results to sustainable and cost-effective healthcare, when related to an emerging market, because it provides continuous care essential for chronic diseases compared to the hospital treatment pattern. Hence, the ecosystem model approach is vital for a sustainable and cost-effective healthcare delivery (Furst et al., 2021).

Decision alignments and partnerships amongst healthcare practitioners, patients, and their families in aligning their various wants, needs, and preferences with emphasis on prevention and wellness promises to deliver quality healthcare that is evidence-based, better delivered, and more affordable in an emerging market economy. Healthcare-related

information shared amongst patients, healthcare practitioners/providers, regulators, and other players in a community is essential to the sustainability and cost-effectiveness of healthcare delivery in an emerging market. This would not be readily achieved without an integrated Information Technology system (ITS) that would facilitate information sharing within the community and maybe its surroundings. Hence, the importance of an adequate ITS that can promote sustainable and cost-effective healthcare ecosystems to adequately coordinate and effectively collaborate healthcare delivery by cloud computing is well-suited for a broad set of healthcare delivery services in a community.

### **The Evidence Supports Model for Healthcare Delivery**

The evidence supports model advocates for the use of nurse practitioners as a cost-effective approach for a sustainable healthcare delivery. The evidence support model has been studied for over 40 years by several researchers (Scanlon et al., 2020), who suggested the use of nurse practitioners as one of the most cost-effective and feasible approaches to a sustainable and profitable system in order to solve LMIC's severe problems of cost, quality, and access to healthcare delivery. This approach will allow patients to receive clinical and economic benefits of direct access to nurse practitioners. The model is not meant to raise the income of nurse practitioners to a level of physicians in areas where their abilities overlap. Instead, it is a model proposal allowing patients to receive clinical and economic benefits of direct access to nurse practitioners, as this would in turn institute a sustainable practice that is cost-effective for an emerging market setting. Collaborative efforts and team-based approaches to healthcare delivery that include teams led by nurse practitioner should be promoted by governments in an

emerging market to improve overall cost-effectiveness of healthcare delivery (Fletcher-Brown et al., 2021). Although quality is a principal concern in any proposal to enhance profitability and sustainability of healthcare delivery, if many decades of experience of nurse practitioners can provide that quality, it is not a problem. Instead, the overall costs of healthcare delivery can be held at unnecessarily high levels that preclude replacing nurse practitioners for physicians in an emerging market. Complete acknowledgement, by the healthcare fraternity, of the measurable practice competencies of nurse practitioners would be a particularly powerful tool to move towards a sustainable and cost-effective healthcare delivery with lower spending and higher quality, especially in terms of the medical home model.

### **The Medical Home Model for Healthcare Delivery**

The Academy of Pediatrics suggested the use of a medical home for children with special healthcare needs in the pediatrics alliance for coordinated care, and further proposed an operational intervention in the sense of a medical home model tool, to combat costs in the delivery of healthcare relative to an emerging market. The model proposal by Medical Home Initiatives (2002) was adopted in the approach of Ray et al. (2020), in an intervention that consisted of a designated paediatric nurse practitioner acting as case manager, local consultant, individual health planner, and medical healthcare professional. This is to enable assessment of parental satisfactions in interventions to assess hospitalization cost impacts for cost-effective reasons. However, Givan (2019) concluded that the medical home model increased parents' satisfaction with pediatric primary care, as those whose needed it most seemed to benefit most from the

intervention model. The Medical Home Initiatives allow a nurse practitioner to meet many of the objectives of serving as a medical home practitioner with a comparatively small financial investment and increased sustainability.

### **Telemedicine for Healthcare Delivery**

We live in a changing world due to innovative technologies, both in communication and the ways we relate to life generally. In this changing world, medicine is not left behind, healthcare advocates have developed and shaped medicine in such a way that practitioners can use invented technologies to save lives and manage patients' health effectively. The model of telemedicine encompasses the application of telecommunication technology in medical diagnosis, treatment, check-ups, and entire management care of patients' health (Hung & Zhang, 2003). Telemedicine involves the use of technology by a doctor or other medical professionals to communicate with patients without being in the same room, venue, or hospital with the patients. Normally it involves the use electronic devices, which include, phone calls, text messages, video chats, and emails to communicate with patients.

Telemedicine sometimes is referred to as telehealth, digital medicine, e-health, or m-health (for "mobile"). However, telemedicine model is more than phone calls, emails, or text messages, rather it has extended into tele-consultation, tele-radiology, tele-surgery, remote patient-monitor, and healthcare remote check-ups (Bahl et al., 2020). The model allows healthcare professionals to identify, assess, diagnose, analyze, and treat patients at a distance using telecommunications technology. Telemedicine system is in two modes of operations; real-time mode and store-and-forward mode (Bahl et al., 2020).

The real-time mode is where patients' information is available to the remote healthcare professional immediately the record is generated (electronically). The store-and-forward mode involves accessing the patients' data at a later time and date by the healthcare professional. Both modes of operation are supported by computer network and wireless communications.

Telemedicine model has undergone a striking evolution in the past decades, becoming increasingly acceptable and affordable by hospitals and individuals. Telemedicine experiments started as far back in the 1960s and 1970s, and most of the projects failed, which caused some turnoff from telemedicine experiments (Ewing & Holmes, 2022). The technology was continued again in the 1980s by researchers, and especially in the 1990s, when the prices of technologies had reduced. In the 2000s, telemedicine was developed more extensively and became firmly established due to influx of internet and broadband networks, especially in the United States of America (Ewing & Holmes, 2022).

Healthcare practitioners have employed the telemedicine model to improve the healthcare system in so many ways (Kumar & Ruikar, 2020; Persaud, 2022). In the cases of accidents, especially when a person encounters injuries in the head, spinal cord and some internal organs, the method of transport and the method of providing care play a huge role in the survival of the patient (Kumar & Ruikar., 2020). This argument is supported by recent research, that effective and early pre-hospital management could increase the rate of emergency case survival of patients (Almathami et al., 2020; Lokken et al., 2020). Therefore, effective pre-hospital management is achievable through a

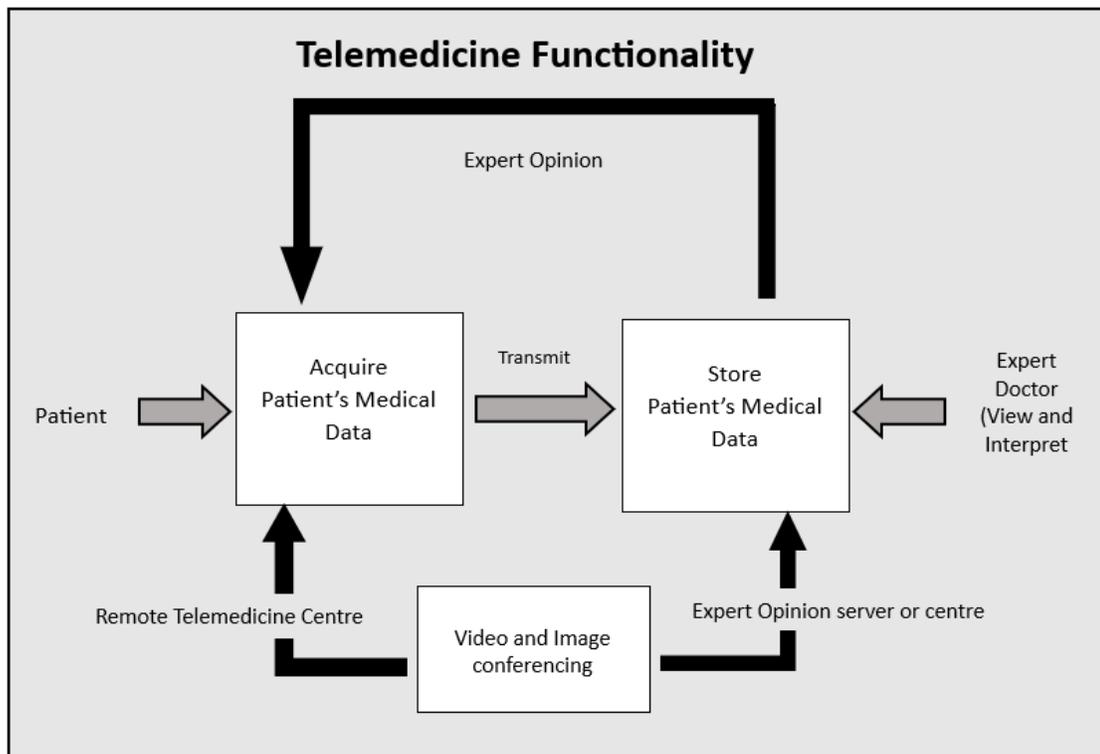
telemedicine system. Management of chronic medical conditions is another aspect of healthcare where telemedicine is more desirable and helpful. Asthma, high blood pressure, diabetes, and cardiac diseases are commonly monitored and treated using telemedicine models (Kumar & Ruikar., 2020; Persaud, 2022). According to Lokken et al. (2020), an example of telemedicine system for monitoring chronic diseases is an electronic peak expiratory flow meter or an electronic blood glucose meter. The gadget connects to a GPRS cellular phone; the phone automatically receives information from the patients and transmits data to a remote server in possession by medical practitioners. The server makes the data available to the medical practitioner and transmits information from the medical practitioner back to the patients. This process happens in real time as measurements, readings and the treatment happen undetectable by the patients.

One of the challenges of telemedicine application is poor infrastructure. Though telemedicine application, especially tele-cardiology has been poor in emerging market economies, including Africa (Maia et al., 2019), South Africa is not left out in the use of telemedicine models. The national health system of South Africa started telemedicine in the late 1990s, with initial application of tele-pathology, tele-radiology, tele-ultrasound, and tele-ophthalmology (de Araújo Novaes, 2020; Gogia, 2019). However, some basic health centers in South Africa have been able to transmit patients' data digitally and securely through telemedicine application. Also, the use of virtual medical support has helped primary care providers in underserved areas such as South Africa (Gogia, 2019). The level of existence of telemedicine in emerging market economies is one of the determinants to the cost-effectiveness of sustainable healthcare delivery in the emerging

market, which is the focus of my study. Researchers have proved that telemedicine would help improve identification of patients, documentation and analysis of patients' records, medication dispensation, which has led to cost reduction as well as improvement in quality-of-service delivery (Abugabah et al., 2020). The application of telemedicine model in the healthcare system would reduce the time healthcare practitioners spent on patients' consultation, time spent on sorting out files, it will also contribute to saving the environment (GREEN) since less paperwork is needed, as depicted by the basic telemedicine model in Figure 4 of this study. In my study, the model of telemedicine would help me address the questions on the accessibility of healthcare system and patients' turn-out rate in healthcare facilities, especially in rural areas. Answers to the question would help address and contribute to decision making processes in efficient allocation of healthcare resources across South Africa.

**Figure 4**

A Basic Telemedicine Model



From "Tele Doctor: Integrated Telemedicine System," by Medisoft Telemedicine, no date (<https://www.slideshare.net/medisoft/tele-doctor-integrated-telemedicine-system>).

Conclusively, in these models and various approaches, the authors examined the suitability of current healthcare deliveries that considered common behavioral patterns in achieving sustainable and cost-effective healthcare delivery in an emerging market. The authors also argue that the maintenance of human-centered coordination in healthcare research and training is critical to the advancement of effective and sustainable healthcare delivery. It is then imperative to understand that the United States defects in healthcare delivery, for sustainable cost-effectiveness, are as synonymous to the South African healthcare delivery system as it is not human centered at present. This also may apply to

other BRICS nations on many levels, as the current healthcare deliveries are not well planned by governments for optimum use by human beings.

A key role for monitoring is to prompt advice about adherence and researchers should assess the need for a switch to a second-line regimen prioritized to generate most significant gains in population healthcare delivery towards sustainable cost-effectiveness for an emerging market economy. Governments should advocate economic assessment and evaluation methods that support decisions to quantify the trade-offs between the additional benefits offered by an intervened model approach against any opportunity costs associated with its introduction regardless of the healthcare delivery captured in unit costs. Therefore, enabling comparisons across all clinical decisions and healthcare delivery systems. This would allow healthcare practitioners to reach decisions that would answer questions on how available healthcare delivery resources can best be allocated and managed, to maximize healthcare across a whole population of concern. This has potentially significant consequences on how economic evaluation is undertaken and how results used in formulating healthcare models implemented by programs in healthcare delivery should be tested to generate substantial health gains to benefit the healthcare delivery system. However, if resources in the models suggested in this study are underutilized or are used less efficiently, or without an alternative use, the models may not be sustainable in providing a cost-effective healthcare in rural South Africa for quality healthcare experiences.

## **Universal Healthcare Coverage**

Several countries have proposed and implemented universal healthcare coverage over the decades, while some countries are still at the verge of proposing and implementing universal healthcare coverage. For instance, South Korea has been on universal healthcare coverage since 1977 (Lee et al., 2019), Thailand since 2001 (Sumriddetchkajorn et al., 2019), while South Africa is on the verge of proposing and adopting a universal healthcare coverage policy (Heunis et al., 2019). According to Sumriddetchkajorn et al. (2019), the major aim of every universal healthcare coverage is to cover everybody not covered by existing government sponsored health insurance that is always meant for only civil servants and other public enterprise workers. More so, it aims at having a paradigm shift from a routine health service system and place more emphasis on health promotion and disease control. It mostly focuses on providing cheap and accessible healthcare services to the citizens of a country, including the self-employed. The target for universal healthcare is always to cover patients who are not medically covered in private health insurance policy.

From the U.S. perspective, there have been several pockets of universal healthcare coverage systems, both for the states and the entire nation. Universal healthcare coverage systems started in the early 1990s, when Professor Alain Enthove (an American economist and former Deputy Assistant Secretary of Defense), called for creation of health insurance purchasing cooperatives (Barr, 2021; Dranove & Burns, 2022). Professor Enthove's call motivated President Bill Clinton's proposal for healthcare reform in 1993, called American Health Security Act (Barr, 2021). There has been other

in-between calls and proposals for universal healthcare coverage, including the State Children's Health Insurance Program (SCHIP) in 1997, and finally the most recent Patient Protection and Affordable Care Act (ACA) popularly known as Obamacare (Barr, 2021; Dranove & Burns, 2022).

The aims and objectives of every universal healthcare coverage, for both developed and developing countries are basically related, but the names may be different. According to Sumriddetchkajorn et al. (2019), major aims and objectives of universal healthcare coverage include; to facilitate right access to healthcare, increase health-seeking behaviors, decline in financial burden, and increase in quality of healthcare services. Some of the aims could be achieved, while some will be achieved in a phased-in process. As of 2006 in Thailand, the universal healthcare coverage enabled the country to increase number of people who seek healthcare services, but the healthcare-seeking behavior, especially for the poor did not significantly change. But remarkably, people felt more secured with the insurance, having the mind that they are covered against unforeseen medical tragedy they might face in future (Sumriddetchkajorn et al., 2019).

Besides some political tussles from opposition parties, most countries encounter a lot of setbacks during the proposal and implementation of universal healthcare coverage, Africa is not an exception to this problem (Barr, 2021; Marten et al., 2014; Tao et al., 2020). Some small businesses and others with tax interest do oppose universal healthcare coverage due to actual or potential cost of the coverage. Secondly, private health insurance providers also oppose proposal and implementation of universal healthcare coverage due to fear of losing clients to the national insurance pool. Thirdly, some big

businesses (manufacturing, communications firms, financial, transportation firms) sometimes oppose universal healthcare coverage due to anticipated increase in taxes in order to fund the coverage. However, most times some big firms embrace the idea as it lessens their burden of seeking and purchasing private health insurance for their employees. More so, it eliminates the burden of compensating employees not covered under private health insurance providers due to their level of earning. Some groups who embrace proposal for a universal healthcare coverage include health organizations, mostly private, as universal healthcare coverage tend to increase access to healthcare services by citizens, which in turn could lead to increase in revenue for healthcare service providers (Dranove & Burns, 2022).

### **Universal Healthcare Coverage in South Africa**

Researchers have recently noted some worldwide concern on the durability of healthcare utilization across the world. This concern is more concentrated on low-to-middle-income countries, which house over 65% of the aged world population of 60 years and older; this fraction is estimated to increase to 79% by the year 2050 (Peltzer et al., 2014). However, BRICS countries represent about 43% of the world's population, which is also comprised of a block of countries with fresh and challenging global health issues, especially South Africa (Marten et al., 2014). Based on these challenges, in May 2012, BRICS countries stressed the importance of proposing and implementing universal healthcare coverage across all BRICS countries (Marten et al., 2014). BRICS presumed that universal healthcare coverage is an essential instrument to achieve the right and

access to health by all, therefore welcomed the increasing global support for universal healthcare coverage.

Among the BRICS member countries, as of 2011, South Africa has the lowest life expectancy, highest maternal mortality ratio, highest prevalence of HIV among adults, as well as high probability of death through chronic diseases (see Figure 3). In addition to these health challenges, disparities in health status across race, geographical areas, social-economic, and rural-urban status hugely exist in South Africa. Despite the legitimate obligation of access to healthcare by all, South African healthcare system remains deeply segregated, with private health insurers covering the rich, while poor individuals are left with no option than to depend on the poorly resourced public healthcare services (Erlangga et al., 2019; Marten et al., 2014; Tao et al., 2020). Secondly, there is massive shortage of healthcare workers, and uneven distribution of available ones across sectors and geographical locations. Thirdly, there is very little mandatory prepayment medical funding or tax-based funding for healthcare services, and this accounts for only 40% of total healthcare funding (Day et al., 2020; Marten et al., 2014). Most importantly, there is a disjointed risk pool of private health insurers, operating separately as risk pools, with weak incentives to provisioning of efficient and quality healthcare services. South Africa is one of the countries in the world with the highest percentage share of private voluntary health insurance, yet only less than 20% of South African population benefit from such resources (Drechsler & Jütting, 2005).

After analyzing all the above healthcare shortcomings, South African government is committed to implementing a universal healthcare coverage under the National Health

Insurance Scheme. This implementation is within a phased-in period of 15 years, with three 5-year phases (Heunis et al., 2019; Marten et al., 2014). The major aim of the proposed South African universal healthcare coverage is to provide a comprehensive and quality healthcare service to the entire population, based on medical need and not based on ability to pay. This will enable individuals and households to be able to access healthcare services without suffering financial hardship or being denied medical care due inability to pay. The National Health Insurance Scheme will have mandatory prepayment mechanism to pool fund together to cater for health need of the entire population. It is aimed at eliminating forms of hidden costs, including user charges, copayments and direct out of pocket payments to healthcare providers (Christmalls & Aidam, 2020; Fenny et al., 2021; Heunis et al., 2019). The proposed South African universal healthcare coverage, under the National Health Insurance Scheme, is currently estimated to necessitate an expenditure of about 336 billion South African Rands (Day et al., 2020) with the proposed speculation of a single National Healthcare Insurance Fund (NHIF) for healthcare insurance. There is a wide expectation that the fund would pull its revenue from taxes and a kind of healthcare insurance contributions for the healthcare equipment purchase and provide healthcare to all South Africans.

However, the South African government faces some obstacles in the move towards universal healthcare coverage. Private healthcare insurance providers are worried about the negative effect of the universal healthcare coverage on their business models, there is also financial feasibility concerns from the National treasury. Most importantly, there is a concern on pooling entire medical funds into a single fund, especially in a

country without vigorous governance, transparency, and accountability mechanisms (Marten et al., 2014). For South Africa to effectively achieve implementation of universal healthcare coverage, the government must incorporate the public opinion into the decision-making process on key policy issues and provide greater public awareness on the applications and implementation processes; this will help carry the entire citizens along on the benefits of universal healthcare coverage (Christmalls & Aidam, 2020). According to Christmalls & Aidam, 2020, governments should increase the share of mandatory prepayment funding, either in the form of general taxes, mandatory contributions, wealth taxes, or mandatory insurance payment. Secondly, the private health insurance providers should be given a clear and defined role on their services during the implementation of universal healthcare coverage to avoid clash of duties and interests between them and the National Health Insurance Scheme.

Relating the universal healthcare coverage to my research topic, I believe that effective adoption and implementation of such a system in South Africa will positively contribute to sustainable healthcare service delivery, only if well implemented and managed. Most importantly, the proposed move to universal healthcare coverage in South Africa will address the questions on the effect the percentage of patients on healthcare insurance have on the profitability of the healthcare practices. Universal healthcare coverage in South Africa will also address the question of how government involvement in co-payment options will affect the quality and profitability of the healthcare delivered.

## **Quality of Healthcare Delivery**

The search for quality products, services, and value for money has always been a key part of human existence. The desire for quality has set firms, businesses, and organization into the habit of considering quality as a first priority and essential part of every business model. This race for quality attainment is not a national issue, but has been globalized, by service providers and other businesses, in all aspects of product offering and service delivery (Weitzel et al., 2021). Quality leads to attainment of competitive advantage, which in turn leads to increased productivity, increased earnings/profit, and thereafter, increased sustainability (Aggarwal et al., 2019; Weitzel et al., 2021). Because of the nature of quality, it is difficult to give it a definite definition. What makes quality more difficult to define is that individuals desiring quality have different satisfaction levels. More so, quality is intangible and cannot easily be measured. Some researchers (both early and recent) have defined quality differently based on the type of study and/or personal expectations from products and services. Therefore, Weitzel et al. 2021, amongst other researchers, have defined quality as value for money, consistent provision of clients' requirements, meeting/exceeding clients' expectations, product, and service satisfactory levels (Aggarwal et al., 2019; Elwyn et al., 2020).

Quality is difficult to define, but healthcare quality is even more difficult. The nature of healthcare services, which include, intangible, experimental, diagnosis, urgency, creates cumbersomeness in defining and measuring healthcare quality. Healthcare services depend on a variety of features, including service processes and delivery, client-service provider interaction, consistency, precision, and timeliness, all

these features are hard to define and measure (Aggarwal et al., 2019; Elwyn et al., 2020). Most importantly, they are subject to the varying clients (patients) with varying needs (disease conditions - hypertensive, diabetic, headache, fever) and being provided by different professions with varying experiences and career paths (doctors, nurses, radiologists, technologists, or scientists) (Ladhari, 2009). Notwithstanding, some early healthcare researchers came up with some definition of healthcare quality. Healthcare quality has to do with provision of healthcare services in a competent, professional, and technical manner, with high level of cultural sensitivity and good communication (Fatima et al., 2019). AlOmari (2021) also defined healthcare quality as consistently providing healthcare services to patients according to clinical guidelines and standards, in an efficient and effective manner, with professionalism while meeting the patients' needs, and at the end satisfying the medical practitioners.

Cost-effectiveness of sustainable healthcare delivery, which is the focus of my study, has an enormous linkage with quality of healthcare service delivery. Research in developed countries has shown that high quality service has a positive impact on healthcare practices and institutions (Fatima et al., 2019). High quality service also improves clinical outcomes and provides both patients and healthcare givers with satisfaction, and in turn reduces cost (Fatima et al., 2019). In 2009, the United States of America, as part of economic stimulus package, agreed to spend billions of dollars (about \$19 billion a year) in implementing electronic healthcare records (EHRs) designed to facilitate computerization of patients' orders, drug dispensing, and digital storage of patients' records (Bardhan & Thouin, 2013). The target was to improve quality of

healthcare delivery by reducing patients' turnaround time, diagnosis errors, and test duplication, thereby leading to significant savings (Bardhan & Thouin, 2013). Also findings on healthcare delivery in India show that quality of healthcare has an impact on healthcare service delivery (Aggarwal et al., 2019).

From an emerging market perspective, particularly Africa, quality healthcare delivery has been a challenging issue, chronic underfunding of public healthcare systems negatively affects the ability of existing health systems in African countries to respond to essential healthcare services. Poor healthcare systems may not be able to handle epidemics, as was observed in some West African countries during the Ebola outbreak in 2014 (Malakoane et al., 2020), and the recent COVID-19 pandemic. In Africa, there seems to be healthcare service delivery satisfaction among patients in some instances, but there are still significant levels of unsatisfactory services received by patients, which may pose an element of cost effect on the sustainability of healthcare delivery. For instance, a research conducted on perceived quality of healthcare delivery in a rural district of Ghana showed increased levels of satisfaction among patients. Those patients still experienced poor attitudes from some healthcare workers, including long waiting hours, high cost of service, constant referral to different hospitals/departments, lack of ambulance facilities, and inadequate staffing (Christmalls & Aidam, 2020). Similar findings exist in South Africa, where perception of healthcare delivery improved, but many South African's healthcare needs were not adequately met, especially the poorer populations in rural areas (Booyesen & Gordon, 2020).

The question left unanswered by the above scenarios in Ghana and South Africa is how the low-quality healthcare service delivery experienced by those patients, impact on the cost-effectiveness and sustainability of healthcare delivery. The next section of the literature enabled me to address this question in the emerging market context, especially in the rural parts of South Africa.

### **Cost-Effectiveness in Globalization of Quality Healthcare**

In the early 1990s, the cost of healthcare was firmly on the national agenda in countries like the United States of America. Based on that, there was already a determination by the U.S. government to prioritize resource allocation towards healthcare funding (Neumann et al., 2022). Medical researchers started using cost-effectiveness analysis, which researchers hitherto have used in finance because of the inappropriateness of monetizing healthcare results, to compare the relative costs and outcomes of different possibilities of healthcare delivery. Thereafter, private healthcare practitioners must strive to improve cost-effectiveness without compromising quality of care. This is the origin of my business problem - private healthcare practitioners have a general business problem of determining the profitability of providing a cost-effective healthcare to rural populations, while maintaining a high quality of healthcare delivery. However, researchers have examined different healthcare service delivery options, programs, drugs, and technologies to determine their various costs, their cost-effectiveness, and the alternatives that may or may not present a better, more efficient way to deliver quality healthcare to remote communities (Thompson et al., 2019).

To control costs, healthcare providers and healthcare customers must understand the comparative value of quality healthcare. However, to achieve quality healthcare delivery, there are two dimensions that are very important; effectiveness of the service and access to the service – the effectiveness of the healthcare quality is usually measured in conjunction with the accessibility of the service by patients (De Guzman et al., 2021). The quality of healthcare framework is most meaningful when applied to the individual patients – in essence, are we measuring effectiveness of clinical care and interpersonal patient care at the same time? However, before the quality of healthcare assessment can start, both practitioners and patients must understand how quality in healthcare is defined and that depends on whether one assesses only the performance of practitioners or also the contributions of the recipients; this assertion broadly depends on how health and responsibility for health are defined (Maria et al., 2022).

Using cost-effectiveness analysis as an economic analysis tool to compare the relative costs and outcomes of different routes of healthcare delivery can be made meaningful, by healthcare practitioners, in a rural context. Nonetheless, in this study, there is an emphasis on the awareness of using cost-effectiveness analysis in the field of healthcare services, even though it may not be appropriate to monetize healthcare outcomes. Therefore, it is pertinent for this study to determine whether the maximally effective or optimally effective care is sought; and on whether individual or social preferences define the optimum (Maria et al., 2022). Therefore, in this study, I examined the different healthcare delivery options in order to, among other things; determine the most cost-effective route to quality healthcare delivery in rural parts of South African

communities. Accountability is also an important factor in delivering cost-effective and quality healthcare, the magnitude of healthcare expenditures can lead to questions about whether more always means better and whether patients' needs are being met in a cost-effective way (De Guzman et al., 2021). Therefore, I used a cost-effectiveness analysis in this study to select a healthcare delivery vehicle that can mitigate the above problems.

Firstly, I considered the use of community healthcare workers in a public-private partnership to assuage the difficulties faced by other private healthcare practitioners in terms of achieving cost-effectiveness. This is possible if the state recruits community healthcare workers and attach them to private clinics and hospitals in rural areas to further support the provisioning of quality healthcare to the rural communities as well as improving the cost-effectiveness to the healthcare practitioners. Guerra et al. (2021) findings reinforced the hypothesis that community healthcare workers may represent, in rural settings, a cost-effective approach for the delivery of essential healthcare services. In rural Africa, cultural differences can be an impediment to healthcare delivery, however, culturally competent community healthcare workers can engage patients in healthcare decisions, guarantee confidence in their decisions, encourage adherence to treatment pathways, and mitigate social barriers to care (Logan & Castañeda, 2020). The cost savings, reduced utilization, and improved quality associated with commissioning a community healthcare worker engagement cannot be overemphasized by the healthcare fraternity. Hence, several researchers have validated the cost-effectiveness of using community health workers in the several studies (Huang et al., 2019; Guerra et al., 2021).

Secondly, healthcare practitioners can deliver quality cost-effective healthcare by using remote patient monitoring (RPM) systems, which is the ability to monitor patients' conditions from a distance using remote sensor technologies. Real-time remote patient monitoring can enable a doctor to remotely assess changes in a patient's condition and react accordingly. Due to non-proximity to established urban communities and limited access to remote rural locations, the quality of healthcare services rendered to rural locations is usually reduced (Ng & Fong, 2022), and the costs are escalated and unprotected (Blumenthal & Hsiao, 2015). Remote patient monitoring systems can be set up by healthcare practitioners to work in different ways, but through a particular process, which include the following;

- Health information are captured by paramedics from a remote device and synced to a cloud infrastructure.
- Healthcare practitioners program their system to gain access to this information through a secure web service.
- Healthcare practitioners can then perform information analytics to identify people at risk that may require more attention.
- Patient profiles can then be highlighted on relevant caregiver dashboards so they can select patients quickly.

This platform is designed for healthcare monitoring in the patient's home as a way to reduce the cost of repeated expensive clinic and hospital visits. Patients may be able to live in their own homes longer because remote monitoring can potentially delay moves to nursing homes or hospitals, and it will be easier for remote caregivers to keep

track of their patient's health from a distance. The exercise can be used by healthcare practitioners to reduce healthcare costs because issues can be addressed before they become acute, which could lead to fewer clinic and hospital visits. In as much as it can be acknowledged by healthcare practitioners that the use of remote health monitoring systems will not replace particular healthcare service provision that requires face-to-face consultations, its ability to supplement some services in rural communities and the benefits should be recognized - ultimately the objectives of considering this alternative is to both improve the quality of care and to reduce or contain healthcare delivery costs (Thompson et al., 2019). This shift from healthcare monitoring from hospitals to the home is disrupting traditional models of healthcare delivery, but if it affords a cost-effective alternative for providing quality healthcare to rural populations, healthcare practitioners must consider the option.

Thirdly, healthcare practitioners training and experience give them understanding of the characteristics of patient-centered care facilitates, its implementation and measurement, can be used as a measure of the quality of healthcare delivered. Scholars have shown that patient-centered care (PCC) promotes practitioner-patient interactions and leads to improved health outcomes and cost-effectiveness (Robinson et al., 2008). The primary characteristics of patient-centered care are (a) patient involvement in care and (b) the individualization of patient care. The use of numeric rating scales to measure the presence of these characteristics can be evaluated by healthcare practitioners using internal communication, shared decision making, and patient education. Promoting the activities of patient-centered care will also improve adherence, therefore putting patient

responsibility for health status back in the hands of patients. The importance and acceptability of simulation in patient-centered care has been growing recently because of its ability to improve quality of healthcare and patient satisfaction while guaranteeing better health outcomes and cost-effective care (Yousef et al., 2022).

Fourthly, telemedicine is gaining traction in recent times, and this relies on computer interface to deliver healthcare services to remote communities. Universal programming interface, universal patient identifiers, improved documentation, and improved data analysis are some of the mediations in telemedicine, and they provide specific interventions that have lowered costs, improved effectiveness and cost-effectiveness of telemedicine (Abugabah et al., 2020). Yang et al. (2021) also demonstrated the cost-effectiveness of an electronic patient management system, which made the entire patients management care both more effective and less expensive. Computer interface alternatives can reduce employee time spent on filing documents, reduce the amount of physical space used to store files or serve patients, and save time spent with information exchange between medical professionals, patients, and insurance companies. In this study, my primary goal was to identify profitable alternatives and determine which approach/construct in the healthcare delivery system is most cost-effective in order to drive a sustainable healthcare delivery in rural parts of South Africa.

### **Complex Adaptive Systems as a Cost Containment Tool in Healthcare Delivery**

The concept of cost containment has been an ancient concept that has to do with expenditure/cost reduction in an efficient manner without compromising quality. This entails efficiency gains in the use of resources (human and materials), or restructuring of

processes, without decrease in quality of products and services (Gossett et al., 2019).

Cost containment also deeply applies to healthcare delivery, where the health status of patients, healthcare providers or healthcare equipment/facilities are not supposed to be degraded due to cost reduction. Cost containment in healthcare delivery is a major part of my study, which focuses on cost-effectiveness of a sustainable healthcare delivery.

However, the issue is whether the use of complex adaptive system should be a tool for cost containment in healthcare delivery.

Definitions of complex adaptive systems converge to one concept. So many researchers, (Berardo & Lubell, 2019; Gossett et al., 2019; Turner & Baker, 2019), have converged the concept to “collection of individual agents”, who might act unpredictably and interdependently due to the dynamism of the system of operation. According to Turner and Baker (2019), the agents are interconnected, and an agent’s action or behavior affects the context of the entire system. More so, the behaviors of these agents in the system are spontaneous and nonlinear. Other characteristics of complex adaptive system includes a diverse group of agents that learn, instructiveness, interdependencies, self-organization, emergence/development, and progressiveness or coevolution (Berardo & Lubell, 2019). Learning by diverse agents, coupled with nonlinear interactions, leads to self-organization, emergence, and coevolution (Berardo & Lubell, 2019).

The healthcare system can be viewed as a complex adaptive system (Gossett et al., 2019). Therefore, it has been well studied by several scholars as a complex adaptive system, made up of patients, nurses, doctors, health administrators, hospital management, and every other health official present in the health system, even the stakeholders

(Berardo & Lubell, 2019; Burrows et al., 2020; Turner & Baker, 2019). In a complex adaptive system, the agents organize themselves in a relatively stable pattern of relationship that might not be controlled by presumed intention (though a protocol exists). Such a pattern could be in the form of how the agents (nurses, doctors, or health management) interact in their work environment, responding to the dynamism of the environment (Turner & Baker, 2019). Coevolution occurs when the agents' response to the environment alters the organization's and the environment's status quo, causing the status quo to become maladaptive. An example is when a primary healthcare in a rural area connects with a hospital system in the urban area to capture patients' data; other primary healthcare in the same community may follow suit, and the hospital system will develop a policy that will control the entire primary healthcare under its affiliation (Turner & Baker, 2019).

This process can as well be applicable to cost containment in the healthcare system, when the interaction of agents in a hospital system positively changes the original processes of apportioning costs/expenses; rather, cost apportionment will be based on dynamism of the current environment. However, a complex adaptive system will help reduce/eliminate some fixed and redundant costs; rather, costs/expenditure will be in accordance with the current environment. Secondly, a complex adaptive system facilitates innovation and creativity, as well as flexibility, where healthcare practitioner/patients interact and act spontaneously due to the dynamism of the environment. In such systems, new ideas are stimulated, supported, encouraged, and implemented spontaneously (Gossett et al., 2019). With new ideas, evolving in the

healthcare environment, the healthcare practitioners will shift costs and expenses to innovative and creative processes, thereby, curtailing redundant costs, focusing on new ideas and processes, in turn achieving a sustainable healthcare delivery system. More so, with new ideas and new processes in place due to this sync of the complex adaptive system within the healthcare environment, patients' satisfaction will be increased. This will in turn lead to high patient turnout ratio in hospitals especially in the rural areas. This section of literature enabled me to address the question on how reception at clinics or hospitals influences a patient's perception of quality of healthcare delivery.

Therefore, it is of utmost importance to note that for a successful complex adaptive system that would facilitate cost containment, there must be an environment. Such environment will be with an atmosphere of listening to people, enhancing relationships, and encouraging creative ideas by allowing non-threatening changes that attract and motivate people to interact (Gossett et al., 2019; Turner & Baker, 2019). Therefore, for a complex adaptive system to be effective as a cost containment tool, an enabling environment that would house creative ideas must be created by the stakeholders in emerging market healthcare systems, especially in Africa (South Africa).

### **Transition**

The objective of this qualitative case study is to explore strategies healthcare practitioners can use to deliver quality, cost-effective and sustainable healthcare to rural communities, especially in emerging market contexts. In Section 1 of this study, I discussed the following subsections: (a) the background of the problem, (b) the problem statement, (c) the purpose statement, (d) the nature of the study, (e) the research question,

(f) the hypothesis, (g) the theoretical framework, (h) operational definitions, (i) assumptions, limitations and delimitations, (j) the significance of the study, (k) literature review, and (l) transition statement.

In Section 2 of the study, I expound detailed characteristics of the purpose statement, the role of the researcher, study participants, research method and research design, population and sampling, and ethical research. Section 2 also includes the data collection process, which contains data collection instruments, data collection techniques, and data analysis. I also discuss the reliability and validity of the study and conclude with a transition statement in Section 2. Section 3 includes an introduction, which was followed by the presentation of findings, the application to professional practice, implications for social change, recommendations for further research, and conclusion.

## Section 2: The Project

In Section 2 of the study, I address in detail the characteristics of the purpose statement, the role of the researcher, study participants, research method and research design, population and sampling, and ethical research. I also include the data collection process, which contains data collection instruments, data collection techniques, and data analysis. I then discuss the reliability and validity of the study and concluded with a transition statement. The work in Section 2 and the results of my interaction with the participants are the foundation leading into Section 3, which includes an introduction, followed by the presentation of findings, the application to professional practice, implications for social change, and recommendations for further research.

### **Purpose Statement**

The purpose of this qualitative case study was to identify the strategies healthcare practitioners use to improve the mode, quality, and profitability of healthcare delivery to the rural Gauteng region of South Africa. The study was conducted on the healthcare sector in the rural Gauteng region of South Africa. The quality of healthcare offered for rural inhabitants in Gauteng is lower than that provided to their urban counterparts (Marten et al., 2014). The implication for social change is the belief that low quality, high cost, and unaffordable healthcare delivery, which does not benefit these rural inhabitants, is socially undesirable (Ng & Fong, 2022). Regardless, an affordable healthcare system will increase access to healthcare services by the poor, including those in the remote and rural communities. I used this qualitative case study to identify approaches that healthcare managers use to support healthcare delivery systems that bring about a social

change aimed at lowering healthcare costs and improving quality healthcare delivery to the rural communities. Hence, findings of this study will assist healthcare practitioners in delivering sustainable, quality, and affordable healthcare to the inhabitants of these rural communities, which will improve accessibility to (a) preventative care, (b) regular care for chronic health conditions, (c) medication adherence, and (d) self-reported healthcare; all aimed at achieving a decreased morbidity rate (Okamoto & Komamura, 2022).

### **Role of the Researcher**

In qualitative studies, researchers examine data through focus group discussions, observation of activities, or interviews. Therefore, the role of the researcher is integrated into the research, as the researcher has to be involved in the research, asking questions or observing the environment of the research (Katz-Buonincontro & Anderson, 2020).

Accordingly, I plan to collect data for my qualitative case study through interviews. I conducted the interviews online, using virtual meeting platforms (i.e., Zoom, Teams, or Google Meet), and telephone conversations. I used these different virtual meeting platforms to provide variety and convenience for the different participants, thereby improving the participants' ability and willingness to complete the interview process, which in turn would improve the research outcome. This approach is conversant with Brall et al. (2021), who alluded that participants' desire to participate in research improves insights into data sharing activities, as well as the research outcome. I recorded every interview and took physical notes during the interview. The interview protocol and interview questions appear in Appendices A and B, respectively.

Quantitative and qualitative researchers have a responsibility to communicate their research and to collaborate with others where appropriate. They generate, transfer, and gain knowledge for the benefit of their research community, the economy, and society (Postholm, 2019). The researcher's responsibility is also to behave responsibly, honestly, and ethically during their research (Bush & Amechi, 2019). Qualitative researchers, in addition, go through the generation of ideas about their research problem in a spontaneous and free-flowing manner; therefore, ethical issues must always apply during the research. The responsibility of the qualitative researcher, to observe phenomenon and occurrences affecting individuals in an ethical manner, is intensified due to the spontaneity in working through the research problem during the qualitative research process.

Researchers, especially those conducting studies with human participants, have legal and ethical responsibilities under the standards of ethical requirements of every research institution. Bush and Amechi (2019) argued that researchers must ensure that the risks of the research are proportional to the expected benefits or take the necessary measures to minimize the risks; therefore, researchers should express the legal and ethical responsibilities to all respondents when obtaining informed consent. This argument is in line with the ethical requirement of research institutions. Based on this requirement, I adhered to the ethical and legal framework of Walden University's institutional review board (IRB) at all times during the research process. The role of the researcher is also to consider whether their research is likely to present inconvenience or harm to potential third parties who are not otherwise involved with the research. In research, one of the

important roles of a researcher is to protect vulnerable participants (Postholm, 2019). As a medical scientist, researching within the health sector, one of my most important roles is to protect my participants due to medical data sensitivity and vulnerability of the research subjects during my period of conducting this research. Researchers cannot avoid making observations that are unrelated to the research question at hand but may be relevant to the well-being of the subjects of the research or the research process (Nichol et al., 2021). Following the recommendations by Nichol et al. (2021), during the process of my data collection, I was cognizant of any observations not related to my research questions, which may directly or indirectly be relevant to the well-being of my research process.

In my study, I complied with The Belmont Report on the protection of participants in biomedical and behavioral research involving human subjects. The report summary indicated the basic ethical principles identified by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research in 1976. The Belmont Report consists of three components: distinction between research and practice, the three basic ethical research principles, and approaches to apply the basic principles in research (Lantos, 2020; Parasidis et al., 2019). Medical researchers have reviewed and found The Belmont Report essential in medical research (Nash & Wells, 2020; Nichol et al., 2021; Parker et al., 2019). The first component requires that a boundary is set between medical clinical trials and behavioral research (Parasidis et al., 2019). Such a distinction determines the way the ethical principle is applied. My study is on the strategies used by sustainable healthcare delivery in an emerging market to achieve cost

effectiveness. My research is set to identify the strategies that could be cost effective in achieving sustainability in healthcare delivery (no clinical trial was involved), therefore can be classified as behavioral research.

In accordance with the second component, I also adhered to the three basic ethical principles of The Belmont Report, which include (a) respect for persons, (b) beneficence, and (c) justice (Lantos, 2020; Parasidis et al., 2019). In the first principle, The Belmont Report required that in any medical research, the participants should be allowed to make autonomous decisions; also, people with limited autonomy should be protected.

In the second principle, beneficence, the researcher has the obligation not to harm a participant, as well as to ensure the maximization of possible benefits and minimization of possible harms. In my study, I ensured protection of the participants from any possible injury, both physical and emotional, that they could incur due to their participation in the research. I administered the interview questions by myself and scheduled online virtual conversations where necessary. In the third principle, the researcher should draw a balance between the benefit and burden before conducting the research and/or while carrying out the research. The findings of my study will allow both private and public health sectors to identify the possible strategies of cost-effectiveness that may lead to profitability of healthcare delivery in an emerging market, particularly in low-middle income countries.

In respect of the third component of The Belmont Report, which is applicability of the principles enumerated above, the report listed three possible ways a researcher will adhere to the principles: informed consent, risk reduction, and subject election and

generalization. In my study, I adhered to the ethical principles of health research by presenting a consent letter to all the participants prior to the administration of my interview questions. In the consent letter, I specified the purpose of my research as well as the risks and benefits involved. This information allowed the participants to make an informed decision concerning their participation in my research. Most importantly, I respected participants' decisions of whether to participate or withdraw from the study.

### **Participants**

Selecting the sample is a significant and inevitable feature of any research process. The major problem is that sometimes researchers underestimated this feature (Islam et al., 2022). The right sample selection will help the researchers to understand the research problem better, apply the research question, and develop the theoretical and/or conceptual framework of the research; therefore, samples are selected based on their suitability to the purpose of the research study (Islam et al., 2022). The target population for this study consisted of the medical directors (who are medical practitioners) of healthcare facilities in rural areas within Gauteng province in South Africa. The sample participants were specialists and general practitioners who own private healthcare facilities or those who have decision-making capabilities in a publicly owned healthcare facility. These participants have already established strategies that help them to ensure cost effectiveness in their health practices/facilities. I chose the Gauteng province for this study because it is the smallest province in South Africa by landmass, but the most densely populated, and it houses the cities of Pretoria and Johannesburg, the political and business capitals of South Africa, respectively (Moeletsi & Tongwane, 2020). Gauteng's

choice is imperative for two reasons: both to contain the time and cost constraints and to obtain representative samples.

One of the major features of conducting research is to decide the sample size. This is because it is not feasible to study the entire population in any study; therefore, a representative sample size is required. In quantitative research, to draw effective inferences about the population of the study, a statistical approach is needed to calculate the sample size (Saunders et al., 2015), but this is not the case in qualitative research. Because statistical analysis is not required in qualitative research, the researchers are more creative in dealing with sampling issues (Bhangu et al., 2023). The researchers do not have to go through the randomization of the sampling process. The focus is always on how the small sample or small collection of cases, units, or activities, explain the social life or the phenomenon being studied (McNabb, 2020).

The major concern is to find cases that will help explain deeper the understanding about the phenomena the researchers are studying. In a qualitative case study, researchers select their cases gradually and do not limit the number of selected participants until the data reaches a saturation point (Bhangu et al., 2023). According to Renjith et al. (2021), researchers determine the number of participants for a qualitative study by looking at the data during data collection. If participants start repeating the stories and no new information is provided to the researchers by any new participants, it means that the data has reached a saturation point. The researchers can then stop selecting new participants for their study (see Figure 5 for a demonstration). When I received approval and permission to conduct my research from the Walden University IRB (IRB approval

number: 07-13-22-0983361), I reached out to the first five participants, who include specialist practitioners and general practitioners in the rural areas of Gauteng, by email and phone to request permission from them to participate in my research. These practitioners are established and have been for over 10 years, which indicates that they should have adopted some cost-effective strategies that ensured sustainability up to such number of years of existence. I am a medical scientist; therefore, I was able to obtain access to the specialists and general practitioners because of the business and professional association I share with them. Because my research adopted the qualitative case study approach, when the first five participants did not reach saturation point, I chose another set of five participants through snowballing or network sampling technique, but the sixth participant was repeating almost what I had gathered from the first five participants. Therefore, I stopped the sampling at five participants.

Following the Walden University IRB approval of my research study and permission from the prospective participants, I sent participant invitations to the sampled medical specialists and general practitioners in the rural Gauteng area. The participants' invitation is included in the study's appendix. However, I considered three underlying issues before selecting these research participants; demographic characteristics, size of their healthcare facility, and their geographical location (Renjith et al., 2021). As soon as my prospective participants accepted the participants' invitations, I prepared a consent letter for each participant to sign before partaking in the interview process. I did not expose the participants' names included in the samples under any circumstance, and there were no inducements for any participant in this qualitative case study. I confirmed

participants' inclusion by email or phone call, and they were also allowed to withdraw from the study by requesting to leave the program through email or phone call.

### **Research Method and Design**

Research methods and design are fundamental in developing a good and reliable research study. A well-articulated research method and design is vital in determining the outcome and results of the study. It ensures appropriateness of the data collected, helps to reduce measurement errors and bias associated with research, and increases reliability of research findings (Creswell & Creswell, 2017; Dodgson, 2021).

### **Research Method**

Research methods are the approaches or procedures researchers use in carrying out research operations. They are all the methods researchers deploy while studying research problems, answering the research questions, and achieving the research objectives (Kothari, 2004; Saunders et al., 2015; Younas et al., 2020).

There are two major groups of research methods: quantitative and qualitative. The method a researcher will choose depends primarily on the purpose of the research under study, the type of information needed, and availability of the information (Kothari, 2004). The two research methods can be used independently, or collectively. If used collectively, it is referred to as mixed method (Younas et al., 2020).

Quantitative research method is an inquiry into a problem that involves testing a hypothesis derived from theory and/or being able to estimate the size or quantity of a variable of interest. It also involves describing (i.e., descriptive design) the characteristics of variables and/or determining the frequency of occurrence, the relationship, and

association (i.e., diagnostic design) among variables (Kothari, 2004). On the other hand, the qualitative research method focuses on subjective assessment of attitudes, opinions, and behaviors. The results from qualitative research are not subjected to rigorous mathematical analysis. The method of data collection is through focus group interviews, projective techniques, in-depth interviews, or structured interviews (Kothari, 2004). It focuses on perceptions, experiences, and opinions of participants instead of from numerical variables (Bhangu et al., 2023). In a structured interview, the researcher asks a standard set of questions (Adeoye-Olatunde & Olenik, 2021).

Mixed method is a research method where a researcher integrates the elements of quantitative and qualitative research methods in one research study. Though mixed method is important in complex health-related research, the major challenge is to get the method purely mixed to give equal stand for both qualitative and quantitative data, and not be dominated by one approach (Younas et al., 2020). For my research, I applied the qualitative research method, to explore effective strategies that facilitate cost-effectiveness in sustainable healthcare delivery. Therefore, I dwell more on the qualitative research method in this section.

Researchers often rely on the qualitative method when they intend to explore behaviors, different perspectives, and life experiences to discover and understand the situation or the case under study, through a holistic framework. The motive to either support or oppose the perspective of a specific phenomenon is by contextualizing the data obtained via surveying or interviewing the study sample (Adeoye-Olatunde & Olenik, 2021). Qualitative data is commonly applied in the study of a phenomenon, approaches,

or strategies of people or organisations, and they may be collected through structured interviews, focus groups, or observations, by asking questions that address “how” and “why” (Adeoye-Olatunde & Olenik, 2021; Kegler et al., 2019; Kothari, 2004; Selvi, 2019). The ideas in the qualitative method are identified from the research questions and are presented in themes. Typical qualitative data collection strategies include (a) administering interviews with open-ended questions in face-to-face, telephonic, and virtual interviews; (b) using focused groups; (c) observing and recording well-defined events, such as counting the number of patients waiting in a hospital emergency room at specified times of the day or the night; and (d) record keeping (Levitt et al., 2021). Although there are many methods to collect qualitative data, interviews, observations, and focus group discussion are the most common and widely used methods (Raskind et al., 2019).

During data collection, depending on the research question, some qualitative researchers gather data from various sources, which is extremely attractive because of the objectivity that can be associated with this approach, but there are dangers. One of them is the collection of large amounts of data that can be overwhelming and may require extensive management and analysis. Often, researchers find themselves confused while trying to integrate the data. In order to bring some order to the data collection, it is preferable for a researcher to focus on one source of data or deploy a computerized database to organize and manage the voluminous amount of data (Vindrola-Padros & Johnson, 2020). In this study, I focused on two main sources of data collection: primary sources, which were semistructured open-ended interviews, and secondary sources,

which included policy documents, journals and other published documents on healthcare sustainability. These secondary sources disclosed information on suggested strategies to be adopted or have been adopted by healthcare practitioners or the entire healthcare system to ensure sustainability. Furthermore, during analysis, qualitative information from the primary courses was transcribed and sorted making it possible to display/identify the research themes relative to the research questions and objectives (Jones, 2023). I sorted and analyzed the information from the secondary sources in themes and relate them to the information from the primary sources (interviews).

In this research, I deployed the qualitative research method. This is because it is the most appropriate strategy to address my research question and achieve my research objective effectively, which is to explore the strategies healthcare practitioners use to provide quality, cost-effective and profitable healthcare delivery. As a researcher, I had the option to use either data collection online or conduct face-to-face interviews with the research participants. In line with the COVID-19 polices and protocols, I deployed the use of virtual platforms in interacting with the participants.

### **Research Design**

For an effective research process, a researcher must have a research design. Research design is the research processes, plans, and schedules a researcher should adopt in collection and analysis of data to effectively address the research question and achieve the research purposes (Raskind et al., 2019). Research design helps researchers to integrate all elements of the research logically and effectively, taking into consideration the purpose of the research and availability of resources needed for the research

throughout the research process (Pallant, 2020). It ensures conducting the research at a minimal expenditure while balancing costs of the research and quality outcomes.

An effective research design is required in research to ensure reliability of the research findings. Research design with a minimal error and cost should be considered effective; however, a design that minimises bias and maximises reliability of the information collected is termed a useful design (Kothari, 2004; Mezmir, 2020; Vindrola-Padros & Johnson, 2020). Most importantly, the design that yields maximum information to address the research question and achieve the research objective is considered the most effective design (Kothari, 2004; Raskind et al., 2019). According to Creswell and Creswell (2017), research designs are different types of investigations within the different research approaches/methods (quantitative, qualitative, and mixed method). As mentioned, I adopted the qualitative research method in this study.

There are different categories of qualitative research designs, which include: ethnographies, case studies, phenomenological research, and narrative research. Ethnographic research allows the researcher to collect data by observing members of a cultural group in their natural setting over a period (Creswell & Creswell, 2017). Phenomenological research focuses on the lived experiences and behaviours of humans who participate in the research (Creswell & Creswell, 2017). In narrative research, the researcher retells the stories of the participant in a narrative list of life events of the participants (Renjith et al., 2021). In a case study qualitative research, the researcher explores in detail a program, an event, an activity, a process of an individual or group of individuals, an organization, or groups of organizations to make conclusive and informed

decision (Bush & Amechi, 2019). The differences between these different qualitative research designs largely depend on the type of research problem identified by the researcher and the objective the researcher is trying to achieve (Bush & Amechi, 2019). For the past 25 years, there has been an increased quest to achieve quality cost-effective healthcare delivery, to rural and remote populations, that is profitable to healthcare practitioners and sustainable in the long run (Wakerman & Humphreys, 2019). Only about 7% of most developing countries' rural populations (for instance - China and South Africa) have healthcare insurance and can afford access to healthcare practitioners, therefore, access to adequate quality healthcare (Blumenthal & Hsiao, 2015). The general business problem is that some healthcare practitioners lack the ability to provide quality and cost-effective healthcare that is profitable, to rural and remote populations. The specific business problem is that some healthcare practitioners do not understand the strategies they require to provide quality, cost-effective and profitable healthcare delivery to rural and remote populations.

For the purpose of my study, I deployed a qualitative, multiple case study research design, which is most appropriate to address my research questions. Multiple case study gives the researcher the opportunity to explore different and multiple scenarios of the research concepts (Onghena et al., 2019). In my study, I intend to explore the strategies of cost-effectiveness to ensure sustainability in healthcare delivery systems. Therefore, I intend to address my research question using a qualitative case study research design, which is “What are the strategies used by healthcare practitioners in

order to provide quality and cost-effective healthcare, that is profitable, to rural and remote populations?”

As I explained under the instrument sub-section, I used interviews and open-ended questionnaires as the media of data collection for my research. I also made use of secondary data sources, which include policy documents, journals, and other published documents on healthcare sustainability. Interviews give researchers the opportunity to address the purpose of the research in an elaborate way, especially in this type of research, which intends to explore and investigate the strategies to improve cost effectiveness and sustainability of the healthcare system in a South African context (McNabb, 2020; Renjith et al., 2021; Swain et al., 2010).

### **Population and Sampling**

#### **Population**

Many scholars have defined research population in different ways, but pointing to same concept of common characteristics. Saunders et al., 2015, defined a research population as a collection of elements (persons or objects) known to have similar characteristics. A research population is a complete set of elements (persons or objects) that possess some common characteristics defined by the sampling criteria established by the researcher (Brangman, 2022). Other scholars also defined population as a natural, political, or geographical group of individuals, objects, animals, or plants (Sileyew, 2019; Stratton, 2021). All individuals or objects within a certain population, which may also be referred to as a focus group or target population, usually have a common, binding characteristic or trait (Stratton, 2021). The target population is basically a group of people

for whom the results of the study will apply to or generalize to (Stratton, 2021). It consists of each element of the entire group, from which the researcher extracts the research sample (subgroup of the members of a population) for participation in a study within a period.

In research, setting up a target population involves identifying the group of people or objects the researcher wants to study. In the case of this study, my target population is comprised of the medical directors (which are medical practitioners, mainly specialists and general practitioners) of the healthcare facilities in an emerging market, focusing on South Africa. My focus on South Africa is motivated by the recent proposal by the South African government to adopt the universal healthcare coverage, through a National Health Insurance Scheme. More so, South Africa is one of the emerging market countries that has recorded high prevalence of HIV, low life expectancy, as well as high maternal mortality ratio (per 100 000 livebirths) (Marten et al., 2014). These challenges have increased the demand for a healthcare system in South Africa, as well has created the need for more, and well-equipped healthcare facilities, so as to meet with citizens' high demands for a well-functioning and cost-effective healthcare system. In addition to these health challenges, South Africa's apartheid past still delineates the health service and resource inequities in the country (Kruger et al., 2021). These attributes made South Africa, among other emerging market countries, suitable for this research.

### **Sampling**

Sampling is essential in research as the researcher cannot study the entire populations. Sampling in research is a process used in statistical analysis in which a

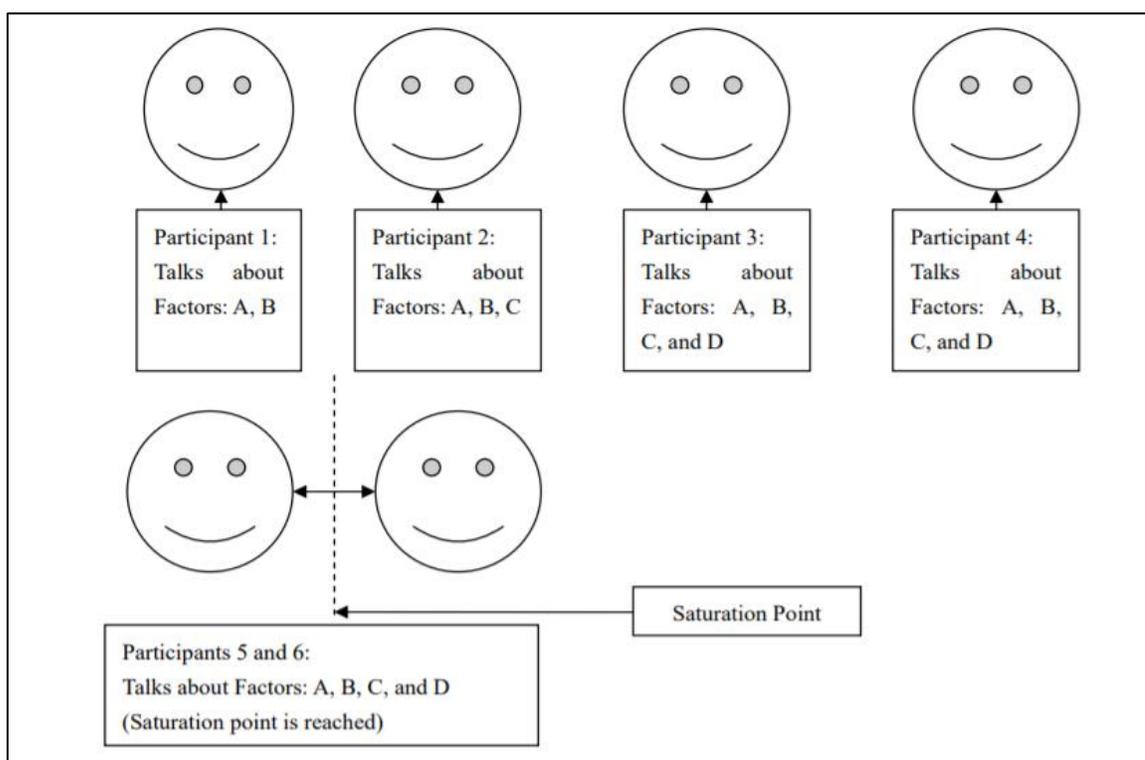
predetermined number of observations are taken from a larger research population (Saunders et al., 2015). The type of analysis a researcher deploys determines the sampling methodology or technique the researcher uses to extract the sample from a larger population (Brangman, 2022). In research terms, a sample could be a group of people, objects, or items that are taken from a larger population for measurement (Sileyew, 2019). The group of people, objects, or items from the general population may share a common characteristic, such as age, sex, or health condition. The groups may be studied for different reasons, such as their responses to a drug, the number of people who use drugs, or the risk of exposure to a disease. The purpose of sampling in research is to find samples that can represent the whole research population; moreover, the use of a representative sample helps to avoid bias in research. The right sample selection helps the researchers to understand the research problem, apply the research question, and develop the theoretical/conceptual framework of the research; therefore, samples are selected based on their suitability to the purpose of the research study (Sileyew, 2019).

Sampling is vital both in quantitative and qualitative research. In quantitative research, the researcher uses sampling techniques to find representative samples suitable for the study, however this is not the case in qualitative research (Bloomfield & Fisher, 2019). Qualitative researchers are not much concerned with sampling; therefore, they rarely draw a huge sample from the studied population. The researcher does not select the participants because they represent the population, but because of their relevance to the research topic (Campbell et al., 2020). The qualitative researcher chooses a sample by starting with a small number of participants, continues with more participants, and looks

at the data during data collections. If participants start repeating the stories and there are no new information, it means that the data has reached a saturation point, and the researcher can stop interviewing more participants (Campbell et al., 2020; Ishak et al., 2014; Parker et al., 2019) (See Figure 5).

**Figure 5**

Indicators for Saturation Point



From “Developing sampling frame for case study: Challenges and conditions” by N.

Ishak, M., A. Bakar, and A. Yazid, 2014, *World Journal of Education*, 4(3), pp. 29–35.

(<https://doi.org/10.5430/wje.v4n3p29>)

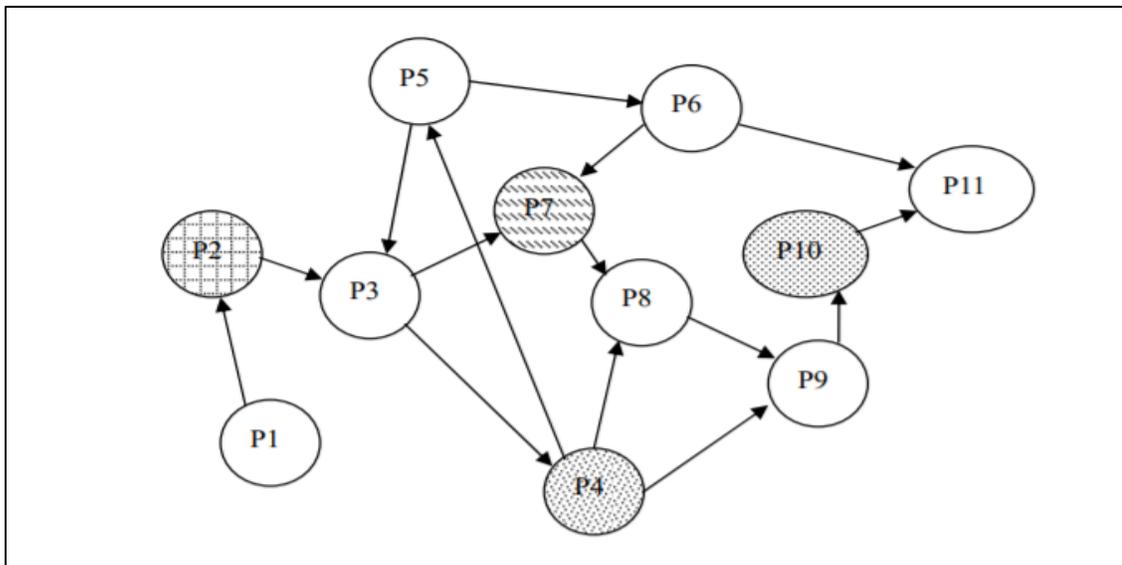
The first stage of the sampling process is defining the target population, which I have specified in the population subsection. It involves defining the group of people to be studied (Stratton, 2021), which in this case, comprises medical directors who have

effective strategies to ensure cost effectiveness of their healthcare facilities in the emerging market of South Africa. The next step is to identify the sample frame, which involves defining and making a list of places where samples are drawn. Thus, my sample frame for this study was a list of medical directors with effective strategies in the rural areas of Gauteng province in South Africa. The last step is to choose samples from the sample frame.

Because sampling is not much of a concern in a qualitative research that adopts snowballing, in this study, I deployed non-probability sampling in selecting my research sample. I first choose five healthcare practices in the rural area of Gauteng province that are well established and have been in establishment for over 10 years. I interviewed the participants in this sample; my data did not reach saturation point, I choose another five healthcare practitioners through snowballing or a network technique, and noticed saturation at the sixth participant. Snowball or network sampling technique is also described as chain referral or reputational sampling (Ishak et al., 2014). It starts with one or few participants, who refer other participants to the researcher. A researcher stops the selection process when there is repetition of participants in the referral process or when the network becomes more than what the researcher can study (Ishak et al., 2014) (See Figure 6).

**Figure 6**

Snowball or Network Sampling



From “Developing sampling frame for case study: Challenges and conditions” by N.

Ishak, M., A. Bakar, and A. Yazid, 2014, *World Journal of Education*, 4(3), pp. 29–35.

(<https://doi.org/10.5430/wje.v4n3p29>)

### **Ethical Research**

Ethics guide the research throughout the research process. Hasan et al. (2021) defined ethics in research as a perspective or assessment for deciding how to act during the research process and for analyzing complex problems and issues. Ethics provides guidelines for the responsible conduct of research as well as educates and monitors scientists conducting research in order to produce research with a high ethical standard (Saunders, et al., 2015). Ethics in research also addresses the application of ethical principles or values to various aspects and fields of research (Pietilä et al., 2020). Ethical research codes and principles include, but are not limited to, the following: honesty,

objectivity, integrity, carefulness, openness, respect for intellectual property, confidentiality, responsible publication, responsible mentoring, respect for colleagues, non-discrimination, competence, legality, animal care, and human subject protection (Salome et al., 2019).

Ethical codes, policies, and principles are very important and useful in research. However, like any set of rules, ethical codes do not cover every situation; they often conflict, and they require considerable interpretation (Pietilä et al., 2020). Therefore, it is important for researchers to learn how to interpret, assess, and apply various research codes and how to make decisions and act ethically in various situations. Most decisions involve the straightforward application of ethical rules.

Adhering to ethical norms in research cannot be overemphasized, and several factors provide a strong inclination towards observing ethics in research. These factors are: (a) ethical norms promote the aims of research, such as knowledge, truth, and avoidance of error; (b) ethical standards encourage the values that are essential to collaborative work, such as trust, accountability, mutual respect, and fairness; (c) ethical norms support the fact that researchers should be held accountable to the public for all their work; (d) ethical norms in research can also help to build public support for research because research funders are likely to invest in a research study in which the quality and integrity of research are impeccable, and (e) ethical norms in research promote a variety of other important moral and social values, such as social responsibility, human rights, animal welfare, compliance with the law, and public health and safety (Shaw et al., 2021). The above factors reaffirm the fact that ethics can be considered within the

precepts of standards of conduct and moral judgment, putting into consideration what ought to be, or what is the ultimate good, and how to achieve it (Hasan et al., 2021; Pietilä et al., 2020). Researchers constantly face several decisions; however, in equal measure these decisions must draw upon the researcher's values and their ethical principles.

However, in recent times, sustainable healthcare delivery efforts do not go without major unprecedented ethical challenges. Environmental uncertainty has a multiplicity of interactions with different aspects of the healthcare system, resulting in poor infrastructural development, inadequate government funding (Ahmed et al., 2019), absence of an integrated system for disease prevention and surveillance, policy reversals, security challenges, and ethical challenges, therefore, an unimpressive healthcare delivery.

Sustainable healthcare delivery can also face challenges in respect of the following: (a) limited growth in financial resources, (b) aging populations, (c) high levels of preventable illnesses, (d) the inability to recruit staff, (e) inflexible labor markets, (f) inadequate governance, (g) lack of healthcare IT investments, and (h) poor access to care in some communities. Nonetheless, governments should explore drivers of collaboration for educational development within medical schools to aim at evaluating the effectiveness of a range of pedagogies for sustainable healthcare education and identify effective strategies to facilitate the renewal of medical curricula to address evolving healthcare delivery challenges and ethical requirements (Abou-Nassar et al., 2020). Sustainable healthcare education can enhance the knowledge and skills needed to

improve healthcare delivery and reduce these challenges that disrupt the delivery of sustainable healthcare.

Healthcare delivery structures are supposed to protect and improve public health, but in more cases than usual, these delivery structures are highly energy demanding and socially impactful, which may cause negative side effects on the people's health and on the environment. These delivery structures become unethical practices when they work against the public health they should be improving. Following the above observation, Gossett et al. (2019) suggested that healthcare professionals should work from a sustainable healthcare facility complex as a whole unit, which works like a single organism that can be robust and productive only if every single part is healthy. The above structure accounts for both the main requirement and quality compliance, since they must be capable of delivering high standards in changing circumstances, as well as encouraging ethical practices within the healthcare complex.

In any research involving human participants, researchers have legal and ethical responsibilities to protect participants' rights. Therefore, during this study, I adhered to the ethical standards of Walden University's IRB. More so, this study involves exploring the cost-effectiveness of a sustainable healthcare delivery system; during the study, I made ensure that suggestions and recommendations towards a cost-effective healthcare system will not be a detriment to or have negative effects on peoples' health and the environment.

### **Data Collection Instruments**

Instrumentation is a procedure researchers adopt in constructing research instruments that could be used appropriately in gathering data while conducting a research study. A research instrument is the tool, device, or technique used by researchers for collecting data. The most commonly used tools in data collection are: questionnaires/surveys, interviews, observations, and focus group discussions (Johnson et al., 2020). The major focus of the research instrument is to provide a data set with sufficient and quality characteristics relating to the research objectives and questions to enable and facilitate achieving the research objective and addressing the research question (Eppich et al., 2019; Vindrola-Padros & Johnson, 2020). In this study, I adopted the use of primary data source (interviews) to collect my data. I also made use of secondary data sources, which include policy documents, gazettes, records, and published documents on healthcare sustainability. I analyzed the data from these two sources to come up with the findings at the end of the research. I have detailed the motivation for the choice of my data sources (interviews and documents) in the data collection technique sub-section.

The chosen interview was a set of well-ordered and arranged questions specifically organized, so that when the research participants answer the questions, a specific problem related to a research study is addressed by the study findings. This is a list of written questions related to a particular research topic, problem, purpose, and questions, which enables the research participants to express their views concerning the study (Eppich et al., 2019; Johnson et al., 2020; Vindrola-Padros & Johnson, 2020). The

topic of my study was discovering effective strategies for cost-effectiveness for a sustainable healthcare delivery in an emerging market context. Thus, the purpose of my study was to identify the effective strategies to ensure cost effectiveness in healthcare delivery in the rural Gauteng region of South Africa. Some of the strategies I explored were, mainly be in relation to cost effectiveness and profitability of healthcare practices in the rural Gauteng region of South Africa.

The framework of cost effectiveness provides decision makers with an outline for evaluation of implications of resource allocation in healthcare delivery. This argument is in line with several scholars who indicated that quality of healthcare service has an impact on healthcare practices and institutions (Owusu et al., 2021; Umeh et al., 2022; Wong et al., 2021). Cost effectiveness and sustainability of healthcare delivery could directly or indirectly be affected by the complex nature of the healthcare system (Gossett et al., 2019). The interview questions I used in my research study were based on the literature and theories underpinning healthcare delivery services.

The first phenomenon in my research study is “sustainability” in healthcare delivery. There is a growing interest in research on sustainability, but it is diversified across many disciplines; as a result, researchers have used several terms to represent sustainability. Some of the commonly used terms include profitability, durability, maintainability, long-term gain, and continuation (Chen et al., 2020; Swain et al., 2010). In my study, I adopted sustainability in the concepts of durability and maintained gain (Streimikiene et al., 2021), which I linked or translated into profitability of the healthcare delivery.

The second phenomenon is cost-effectiveness in the healthcare delivery system. Some of the points that define this concept include administrative and management costs, personal costs, productivity costs, and staff compensation (personnel costs). Also, some researchers use the quantity and quality of work performed during a specific period of time to define effectiveness (Lim et al., 2020). The motivation behind quantity and quality of work is that the quality of work carried out is also important, just as quantity of work produced. This is because a cost is incurred if there is repetition of work due to impaired quality.

In my study, I also arranged the interview questions to enable me to identify the questions that most determine strategies of cost effectiveness in sustainable healthcare delivery systems. Based on the definition of sustainability I have adopted in my study, which is durability and maintained gain, I applied a detailed and robust interview questions that is designed and validated by Swain, et al. (2010), but with few adjustments from Akinyemi and Ojah (2018) to align with the purpose of my research. Both Swain et al. (2010) and Akinyemi and Ojah (2018) adopted mixed research methods in their studies. I adopted the qualitative section from both studies to explore effective strategies to ensure cost effectiveness in a sustainable healthcare delivery. Swain et al. (2010)'s study is on the sustainability of evidence-based practices, focusing on mental health agencies, while Akinyemi and Ojah (2018)'s study is based on sustainability factors for entrepreneurship phases in emerging economies.

To identify the strategies that ensure cost effectiveness in a sustainable healthcare delivery, I presented my interview questions in two sections (Appendix B). Section A

was set out to find out if the healthcare practice has been sustainable in terms of making long-term gain (profit), years of existence, and mode of expansion (number of branches, number of employees). In Section B, I asked questions to identify the strategies my participants have adopted to ensure sustainability and cost effectiveness in their healthcare practices. I adopted open-ended questions that did not result in a yes or no answer, where I provided participants the opportunity to speak more on the interview questions and express their views on sustainability and cost effectiveness based on the questions I asked. The IRB and my chair approved my interview questions before I administered them to the research participants.

### **Data Collection Technique**

Research studies are only as good as the data that they are based on, so choosing the right technique of data collection can make the difference in the research outcome. Data collection techniques may include interviews, observations, questionnaires, documents and records, and focus group discussions (Vindrola-Padros & Johnson, 2020). I looked at these five different data collection techniques – observations, questionnaires, interviews, documents and records, and focus group discussions – and evaluate their suitability for my research process.

Direct observation of phenomena is a very quick and effective way of collecting data with minimal intrusion. Observation as a data collection technique is a process in which one or more persons watch what is occurring in a real-life situation, classifying and recording those real-life occurrences (Sileyew, 2019). This method is more subjective and is most suited for descriptive sociological research (Moser & Korstjens,

2018). If the observation is simple and does not necessitate interpretation, it requires a minimal and simple training regime for the survey workforce (Saunders et al., 2015). However, observations that are more complex require special instruments or tools, and the analysis may rely on expert opinions to avoid distortions (Moser & Korstjens, 2018). Observations are conducted to collect data either during quantitative, qualitative, or mixed methods research (Saunders et al., 2015).

Focus group discussions can be a combination of interviewing, surveying, and observing. This is a data collection method that involves the presence of several relevant people together at the same time, who can encourage each other and help researchers uncover information that the researchers may not have visualized (Sim & Waterfield, 2019). This is also a technique that helps the researchers to corroborate the information instantaneously, and it gives researchers a chance to build a balanced perspective on the issue being researched (Saunders et al., 2015). However, finding groups of people who are relevant to the survey and persuading them to come together for the session at the same time can be a challenging mission (Sim & Waterfield, 2019). Secondly, focus group participants can easily succumb to groupthink, and this may conceal the diversity of opinions (Ricciardelli et al., 2021).

Documents and records afford the researcher a chance to collect a significant amount of data without asking anyone questions. Documents and records-based research use existing data for a study (Dalglish et al., 2020). Government documents, medical records, academic transcripts, attendance records, meeting minutes, and financial records are just a few examples of this type of research data sources (Sileyew, 2019). Using

documents and records can be efficient and inexpensive because the researcher is predominantly using research that has already been completed by other scholars. However, since the researcher has less control over the results, documents and records can be an incomplete data source (Dalglish et al., 2020). Documents and records can be more comprehensive than observations and interviews because researchers can learn more about a group of people just by examining materials the group used.

The use of interviews has some advantages over the use of questionnaire and other data collection techniques in research. Interviews can help the researcher overcome most of the shortfalls encountered when using questionnaire or focus group discussion data collection techniques (Sileyew, 2019). Interviews, unlike questionnaires and focus group discussions, allow the researcher to uncover a deeper understanding of the rationale behind the participants' insights and responses (McGrath et al., 2019). The participant's response rate and quality can be improved by the presence of a professional interviewer (McGrath et al., 2019). Interviews can provide the most suitable platform for studies that deal with complex issues like disease outbreak, human trafficking, or effectiveness of a project because in cases like these, the interviewer usually helps the participants to understand the situation better (Davis et al., 2019; Woodfield et al., 2019).

However, an interview has its own shortcoming, despite its advantages. The cost of conducting the research can be significantly increased by using interviews as a data collection tool (Vindrola-Padros & Johnson, 2020). More so, the use of interviews can introduce some elements of bias in participants' responses (Davis et al., 2019). Participants can be influenced by the interviewers' presence, voice expressions, and/or

body gestures. Another shortcoming of interviews as a data collection technique is that there could be gaps during data transcription (Vindrola-Padros & Johnson, 2020).

Though there is always the participants' voice recording during the interview process, anything not understood by, or speech not clear to the interviewer afterwards cannot be retrieved. This type of lapse creates an avenue for bias during interpretation of the research findings and results.

There is no single best technique or tool to collect data: the most suitable method is the one that best provides answers to the research questions using the available resources. According to Saks and Allsop (2019), the mixed method technique is ideal in sustainability research. A quantitative survey could be applied to examine the factors that affect sustainability, while qualitative research design, for instance an interview could be used to interview stakeholders to find out why programs were or were not sustainable, according to Swain et al., (2010), also to understand the different processes that occur across organizations. However, many health researchers have adopted the qualitative research design in the study of sustainability and the healthcare sector (Leite et al., 2020). My research is not entirely based on sustainability of the healthcare system, rather on the cost-effectiveness of a sustainable healthcare delivery; therefore, I propose to investigate and explore the perception of healthcare practitioners (mostly medical directors) on the cost-effectiveness of sustainable healthcare delivery in an emerging market context. Therefore, an interview conducted on a group of medical directors and open-ended questionnaires administered to the same group was suitable for my study. I also made use of secondary data sources, which include policy documents, gazettes, records, and

published documents on healthcare sustainability. Documents and records can be more comprehensive than observations and interviews because researchers can learn more and confirm some of the points from the interview.

### **Data Analysis**

The next stage in research after data collection is data analysis. Data analysis is a process where data from various sources are gathered, reviewed, and then evaluated to form some sort of findings or make some conclusions (Pallant, 2020; Saunders et al., 2015). During data analysis, researchers use analytical and logical reasoning to achieve refined results from the data they collected, by examining each component of the data provided (Janostik et al., 2020). The main purpose of data analysis is to find meaning in the data provided so that the derived knowledge can be used to make inferences and informed decisions.

There are two conspicuous methods of data analysis: qualitative data analysis and quantitative data analysis. Each of the methods has their data analysis techniques depending on the data collection instruments. Interviews and observations are used in qualitative research, while experiments and surveys are mostly used in quantitative research. According to Mehrad and Zangeneh (2019), quantitative research and qualitative research are conventionally different from each other running in conformity with accustomed directions. Quantitative research deals with solid and factual data, while qualitative research is described by various scholars as dealing with softer data, but yielding deeper insights (Mehrad & Zangeneh, 2019). Quantitative data analysis is objective, dealing with classification of data based on quantifiable statistics. However,

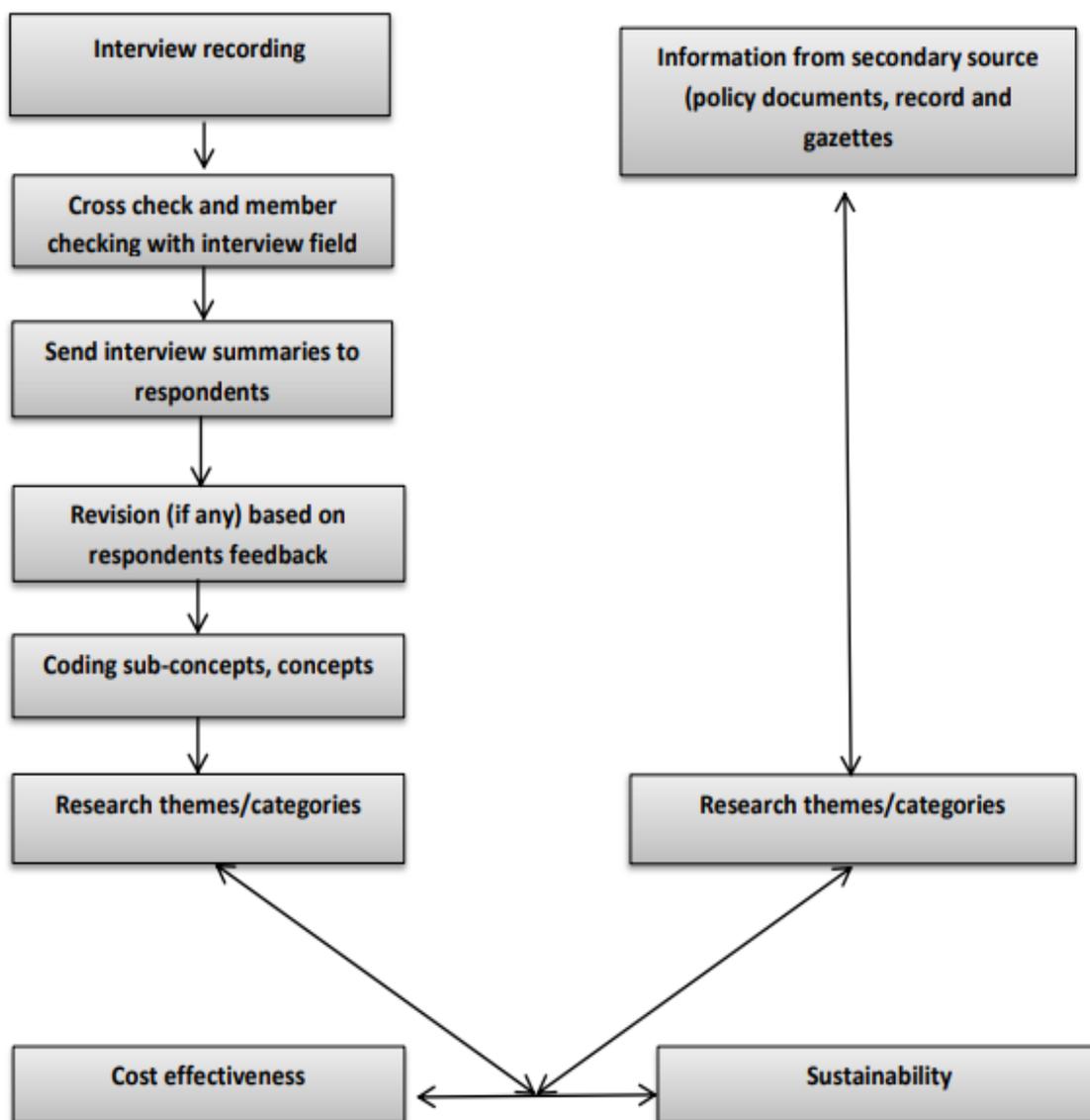
qualitative data analysis is subjective, dealing with classification of objects according to properties and attributes (Mehrad & Zangeneh, 2019).

The tools for data analysis in quantitative and qualitative research are clearly distinct. Data analysis tools, especially for quantitative data analysis include a series of charts, maps, and diagrams designed to collect, interpret, and present data for a wide range of applications in research and business (Ho et al., 2019). However, qualitative data analysis begins with data transcription, coding, and identifications of themes according to the research objectives and research questions (Rashid et al., 2019). As detailed in previous subsections, I deployed qualitative data analysis methods, using a case study approach. However, I used some series of graphs, charts, and tables to analyze and present my demographic results, which include age, and numbers of branches of the medical practices.

As a qualitative case study research, I transcribed the recorded raw data from interviews. I crosschecked the transcribed data with any notes I took during the interview process. To ensure consistency and effective representation of the participants' opinions, I sent summaries of the transcribed data to the participants to allow them to check and correct for inconsistency in their interview responses. In the second stage, I coded data into sub-concepts, main concepts, and finally into the research themes/categories. I also developed themes from the secondary data sources (documents, records, and policies). From the codes and the themes, I developed, I was able to explain the strategies of cost effectiveness in a relationship to sustainability of the healthcare service delivery in an emerging market country. The steps and processes I adopted are explained in Figure 7.

Figure 7

Steps for Qualitative Data Analysis



From “Case study method: A step-by-step guide for business researchers” by Y. Rashid, A. Rashid, M. A. Warraich, S. S. Sabir, and A. Waseem, (2019), International Journal of Qualitative Methods, 3(18), 1–13. (<https://doi.org/10.1177/1609406919862424>)

## **Reliability and Validity**

In qualitative research, the researcher should provide evidence of checks that the data and the research findings are reliable and valid. Nonetheless, the reliability and validity of the research findings are not measurable (Saunders et al., 2015). Reliability deals with the consistency of a measure, while validity is about the accuracy of a measure (Howell et al., 2021). In my study, I deployed the following processes to ensure the reliability and validity of my data and research findings.

### **Reliability**

Reliability in research is a measure of the extent to which the research results can be reproduced when the research is repeated under the same conditions, by defining the rigor and integrity in which the research is conducted, to ensure the credibility of the research findings (Sürücü & Maslakçı, 2020). To ensure reliability and dependability of my research, first, during data collection, I made sure I reached a data saturation point before I stopped recruiting new research participants. Secondly, after I transcribed the interview data, I sought the opinion of my chair to check my data transcription. This helped me to trace any information I might have omitted due to fatigue or oversight during my personal transcription. I also sent back the summaries of the transcribed data to the participants to check for any omission and/or misrepresentation in their responses and views on the interview questions. Most importantly, to reduce personal bias, I used member checking, where I allowed the participants to review and comment on my interview interpretation process. I interpreted the data and shared the summaries of the results with the participants; this enabled each participant to provide feedback on my

research findings. Researchers use member checking to increase the accuracy of the research results, checking for correct meaning or words and choice of words (McGannon et al., 2021; Sürücü & Maslakçı, 2020).

### **Validity**

Validating research findings in every research is essential. In qualitative research, validity is the credibility, transferability, and confirmability of the research findings (Almanasreh et al., 2019). In my research, I made sure that my research findings are valid by deploying the following processes:

### **Credibility**

Researchers need to assure the creditability of every research outcome. Qualitative researchers are required to disclose data collected so that it may be re-evaluated and analyzed if need be (FitzPatrick, 2019). In this my study, to ensure credibility, I made sure all the data I collected, the transcription, and the codes are available for any re-analysis or review if need be. I effectively stored all documentation, including interview transcripts, thematic analysis, and supporting notes for reputational and credibility purposes for a period of 5 years before I dispose them.

### **Confirmability**

Every research finding can be confirmed by other researchers. In qualitative research, researchers ensure confirmability by ensuring that the research findings can be confirmed or be supported by others (Sumrin & Gupta, 2021). To ensure confirmability of my research findings, I adopted open-ended interviews, which allowed me to probe for more points and views from the participants. I also deployed member checking to allow

the participants to comment on my results after I have analyzed the data. They also helped to check for any omission on the points and views they provided to me during the interview. I also adhered to qualitative case study data collection and analysis techniques.

### **Transferability**

Transferability means that the outcomes of such research can be re-analyzed to arrive at a different set of outcomes. Nassaji (2020) defined the transferability of research as a framework with detailed descriptions for further research to be conducted, to discover more insights on the subject matter. I probed participants during the interview, in order to stretch the insights. I made sure that I ask the interview questions in a manner to enable the participants give their complete views on the subject I researched on. I analyzed and presented my research results based on the interview in a manner that can help readers to conduct further research on the subject matter.

### **Transition and Summary**

The objective of this qualitative case study is to explore the strategies healthcare practitioners can use to deliver quality, cost-effective and sustainable healthcare to rural communities, especially in emerging market contexts. In Section 1 of this study, I discussed the following subsections: (a) the background of the problem, (b) the problem statement, (c) the purpose statement, (d) the nature of the study, (e) the research question, (f) the hypothesis, (g) the theoretical framework, (h) operational definitions, (i) assumptions, limitations, and delimitations, (j) the significance of the study, (k) literature review, and (l) transition statement.

In Section 2 of the study, I expounded the detailed characteristics of the purpose statement, the role of the researcher, study participants, research method and research design, population and sampling, and ethical research. Section 2 also included the data collection instruments, data collection techniques, and data analysis. I also discussed the validity of the study and concluded with a transition statement in Section 2. Section 3 includes an introduction, followed by the presentation of findings, the application to professional practice, implications for social change, recommendations for further research, and conclusions.

### Section 3: Application to Professional Practice and Implications for Social Change

#### **Introduction**

The purpose of this qualitative case study was to identify the strategies healthcare practitioners use to improve the quality and profitability of healthcare delivery to the rural Gauteng region of South Africa. In this section, I present the themes and the findings identified from the data collected during this study. To answer the research question, I interviewed five healthcare practitioners who were in active practice for 5 years or more. The five healthcare practitioners consisted of one regional hospital director, two medical specialists, and two general medical practitioners.

During the analysis, four major themes emerged from the data collected from the five healthcare practitioners I interviewed: (a) the use of telemedicine to facilitate mode of healthcare delivery; (b) the use of point-of-care testing at primary healthcare facilities, to initiate and diagnose patients before transferring them to clinics or hospital; (c) the implementation of national health insurance scheme to mitigate health cost on patients; and (d) the implementation of complex adaptive systems to synchronize healthcare delivery operations. Four additional themes emerged on the challenges healthcare practitioners face: (a) provision of health education to patients, (b) relaxation of the legal and ethical burdens imposed on healthcare practitioners, (c) improving the quality of primary healthcare, and (d) mitigating individual differences among healthcare practitioners.

### **Presentation of the Findings**

To achieve the purpose of this study, the research question was as follows: What are the strategies required by healthcare practitioners to provide quality and cost-effective healthcare delivery that is profitable to rural and remote populations? To answer the research question, I interviewed only five healthcare practitioners after I had reached saturation through the snowball sampling method I applied. All the participants provided sufficient information during the interview, and they all have a passion for their patients and the sustainability of their healthcare facilities. I interviewed each of the participants using a semistructured interview through face-to-face and/or use of virtual platforms, depending on which method was convenient for a participant. To ensure reliability and dependability, I reached a saturated sample where no new information was forthcoming. I also deployed member checking, where I shared summaries of the transcribed data with the participants to check for any omissions and/or misrepresentations in their responses and views on the interview questions. I reviewed documents, records, and journals on health policies to analyze the existing strategies in the South African healthcare system. By both conducting interviews and reviewing healthcare policy materials, I checked for consistent themes on healthcare strategies that can ensure cost-effectiveness and sustainability in the healthcare system. This approach of combining themes from interviews and reviewed documents is a form of triangulation of qualitative data.

The cost-effectiveness analysis framework extended to the fields of medicine and healthcare services by Russell et al. (1996) was used to explain the strategies required by healthcare practitioners to provide quality and cost-effective healthcare that is profitable

to rural and remote populations. Cost-effectiveness analysis involves comparing the relative costs of achieving the same outcome using different activities (Kim et al., 2020). I used the cost-effectiveness analysis to support the assumption that mode, quality, and cost of healthcare delivery would affect the profitability and sustainability of the healthcare delivery process. In this research that is grounded in cost-effectiveness analysis, four major themes emerged. The emerged themes include (a) telemedicine, (b) the point-of-care testing, (c) national health insurance scheme, and (d) complex adaptive system. I also found four themes that emerged on the challenges or obstacles healthcare practitioners face in adopting the identified healthcare delivery models: (a) patient's health education, (b) legal and ethical burden on medical practitioners, (c) quality of the primary healthcare, and (d) individual differences among healthcare workers.

I used the Nvivo Pro Word Cloud to analyze the interview responses from Participant 1 to Participant 5. The Pro Word Cloud magnifies and boldens the word (theme) that occurs more frequently than other words. Each of the four themes emerged in the data based on the research question.

### **Research Question**

What are the strategies required by healthcare practitioners in order to provide quality and cost-effective healthcare that is profitable to rural and remote populations?

### **Demographics of Participants**

Before I carried out this study, I applied for, and received approval from the IRB at Walden University to interview healthcare practitioners and analyze their opinion on the strategies required to provide quality and cost-effective healthcare delivery that is

profitable to rural and remote populations in low-middle-income countries. I interviewed five healthcare practitioners; before the interview, I sent an invitation to each of the participants and requested for date and time. Before each of the interviews, I presented the interview protocol instrument to the participants, explained to them the purpose of the study, and assured them of the anonymity of their identity and information they provided. I also presented the consent form which gives the participants the right to withdraw from the interview if they do not feel safe or comfortable with the questions.

All five healthcare practitioners I interviewed practice in rural parts of Gauteng province of South Africa. One of the practitioners is a regional hospital director, while two are medical specialists, and the last two are general medical practitioners (see Table 1 for their demographics). Of the participants, one is a female while the other four are males. Three of the participants are between the ages of 40 and 50, while two are between the ages of 50 and 60 years.

**Table 1**

Demographics of Participants

Participants	Age range	Gender	Level in office	No. of years of operation	No. of branches
P1	40-50	Female	Medical regional director	7	11
P2	40-50	Male	Medical specialist	18	2
P3	40-50	Male	Medical specialist	14	2
P4	50-60	Male	General medical practitioner	10	3
P5	50-60	Male	General medical practitioner	6	2

## Themes

During the interview, four major themes emerged from all five participants when they were asked to identify the healthcare delivery models they found to be effective in improving the quality, cost-effectiveness, and profitability of the healthcare delivery.

- Theme 1: The use of telemedicine to facilitate healthcare delivery
- Theme 2: The use of point-of-care testing to initiate and diagnose patients before transferring them to clinics or hospitals
- Theme 3: The implementation of a national health insurance scheme to mitigate health costs on patients
- Theme 4: The implementation of complex adaptive system to synchronize hospital operations

Four additional themes emerged on the challenges healthcare practitioners face when adopting any healthcare delivery model.

- Theme A: Lack of health education: Provision of health education to patients
- Theme B: Excessive legal and ethical requirements on health practitioners: Relaxing the legal and ethical burden imposed on doctors
- Theme C: Poor quality of primary healthcare: Improving the quality of primary healthcare
- Theme D: Individual differences among health workers: Mitigating individual differences among healthcare practitioners

However, Themes 1–4, regarding strategies to improve quality, cost-effectiveness, and profitability of the healthcare system in South Africa, are the major focus of this study.



**Theme 1: Telemedicine.** All the five participants stressed the importance of having a quality healthcare system in a country. They mentioned that the use of telemedicine will improve the quality of the South African healthcare system.

Telemedicine is the application of telecommunication technology in medical diagnosis, treatment, check-ups, and entire management and care of patients' health (Mansour & Abdelrahim, 2019). Telemedicine involves the use of technology by a doctor or other medical professionals to communicate with patients without being in the same room, venue, or hospital with the patients. This allows healthcare professionals to identify, assess, diagnose, analyze, and treat patients at a distance using telecommunications technologies.

All five participants are of the opinion that in this era of digitization, the South African government and health professionals should not leave the health system behind. Participant 3 stressed the fact that the use of telemedicine would have made a big difference in the healthcare system during the COVID-19 global lock down. Participant 5 added that South African government must investigate proposing and adopting the use of telemedicine. All the participants agreed that with the use of telemedicine, the quality of healthcare delivery will improve, where patients will be attended to digitally or electronically before taking them to, and/or admitting them into hospitals. Participant 4 stated, "I will support the implementation and real actualization of telemedicine in the country, telemedicine is the new way to go in this digital era." All participants agreed that the adoption of telemedicine might seem expensive at the beginning, but it will reduce cost and ensure sustainability of the healthcare system in the long run. Participant 1 stated

“Telemedicine is very important in improving quality, cost-effectiveness and profitability of healthcare system in South Africa, maybe in the long run.” When I asked about how the profit of the healthcare system can increase if the adoption of telemedicine will be expensive, Participant 2 gave a very short and resolute point “To do things right, we definitely need telemedicine.” He added that Dis-Chem pharmacy (one of the biggest pharmacy chains in South Africa) has adopted an element of telemedicine in its healthcare delivery model, especially during the COVID-19 global lockdown.

**Theme 2: Point-of-Care Testing.** The second theme that emerged during the interview as a strategy to improve the quality of the healthcare delivery system is the use of point-of-care testing services in the South African healthcare system. Point-of-care testing is a new strategy for real-time, on-site, rapid and accurate detection of illness or disease at the patient’s point of need. This is a diagnosis carried out closer to the patient’s care (Baker et al., 2020).

According to all the participants I interviewed, the use of point-of-care testing will be a reliable strategy to reduce costs in the healthcare system. They believe that the adoption of point-of-care testing will relieve the medical doctors the burden of attending to minor illness, therefore focusing their attention on more complicated medical cases, and saving more lives. They also believe that the use of point-of-care testing will enable quicker diagnosis of infectious diseases, which will facilitate quicker treatment and an increase in life expectancy. According to Participant 2, “Point-of-care testing reduces so much burden on medical doctors, thereby reducing fatigue and in turn improves quality of healthcare delivered.”

The participants are also certain that the use of point-of-care testing will reduce the cost of operating the healthcare system. Participant 3 stated that “Point-of-care testing attends to minor medical issues that are not supposed to be taken to hospitals, thereby reducing cost of healthcare on patients.” Participant 4 stressed that “ehmmm, I certainly believe that implementation of point-of-care testing reduces, ehmm, will reduce escalation of minor illnesses, therefore, reduces cost and increases profitability; they said a stich in time saves nine.” Participants 1 and 5 did not specify the area point-of-care testing will improve in the healthcare system, but they continually said that this service is very important, and it can save lives. According to Participant 1, “Point-of-care testing is very important; it saves lives,” and Participant 5 added, “Point-of-care testing is very important, it saves so many things in the healthcare system.”

**Theme 3: National Health Insurance Scheme.** Another theme that emerged during the interview is the proposal for, and adoption of the National Health Insurance scheme in the South African healthcare system. The South African government has been at the verge of rolling out the National Health Insurance scheme, which is presumed to cover all South Africans’ healthcare costs, when implemented (Christmals & Aidam, 2020). When I asked the participants the strategies that will improve the quality of South African healthcare system, they also mentioned the adoption of the national health insurance scheme. Some of them stressed the fact that national health insurance will provide healthcare inclusivity to all South Africans.

According to Participant 1, “South Africa really needs a National Health Insurance scheme to ensure that good healthcare is affordable by all, especially the poor”.

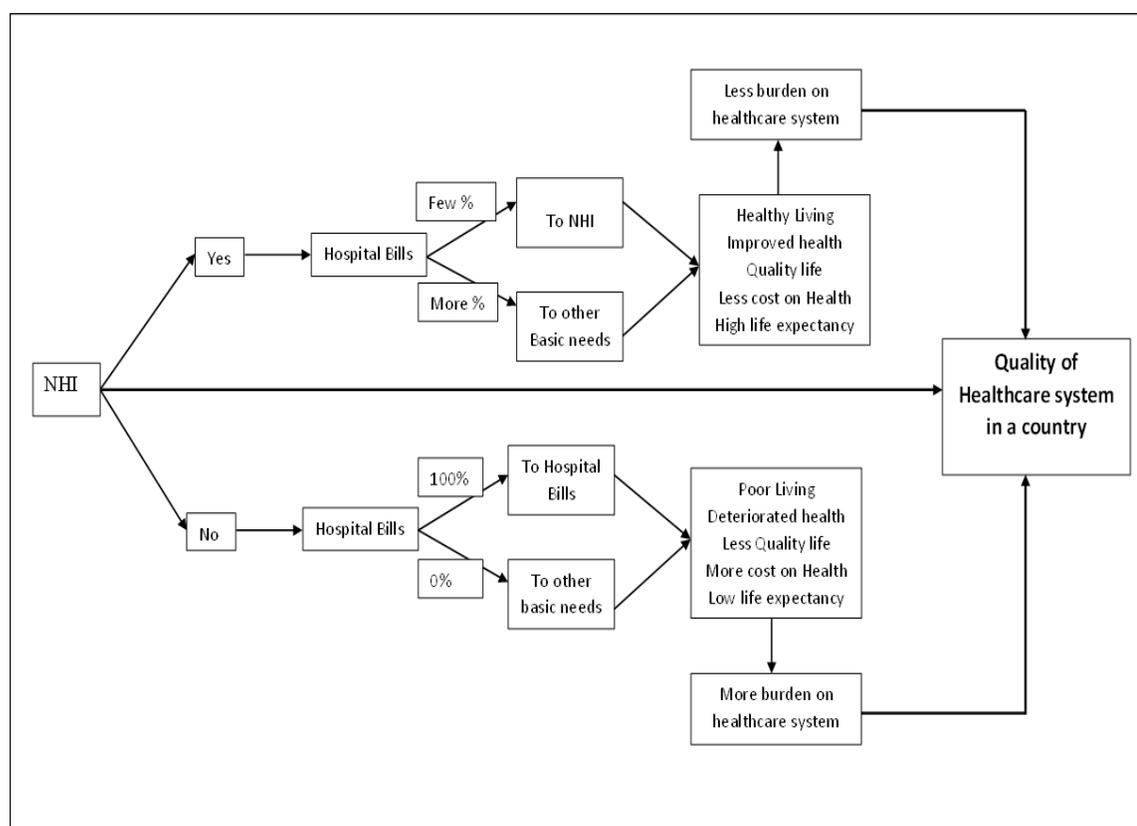
Participants 3 and 4 added that the adoption of a National Health Insurance scheme will improve the quality of health and life of individuals within South Africa, as well as help to alleviate poverty. The participants argued that if the National Health Insurance Scheme covers all individuals in South Africa, especially the poor, such individuals will channel money meant for hospital bills to basic needs, including healthy meals and exercise. This approach will create a circle of effectiveness that will save cost and improve profitability of the healthcare system in the long run. Participants 2 and 5 stated that for South Africans to improve on, and maintain quality of good living, national health insurance should be implemented. Participant 2 stated, “A National Health Insurance scheme has been implemented by so many other countries; therefore, South Africa will not be an exception, we need this to improve life expectancy.” Participant 5 added, “Other countries have been implementing National Health Insurance, why can’t we? If South Africa wants to remain at the top in Africa, a National Health Insurance scheme is a must.”

Participant 1 gave a detailed example and explanation of how some rich individuals in South Africa with private medical insurance (referred to as Medical Aid) can access the healthcare with ease. Such rich individuals have access to the best healthcare facilities, the best doctors, and the best medical facilities (laboratory, radiology, and pharmacy). They have the confidence to walk into any hospital because their medical bills are covered, unlike the poor without any medical aid, who may decide to endure the pain of illness for a few more days; if it persists, they will start analyzing the cheapest healthcare they can afford. With this approach to health by the poor, due to

the lack of a medical insurance, the average health of a poor individual in South Africa deteriorates, creates more burden in the healthcare system, and eventually leads to a deteriorated healthcare system (unsustainable healthcare system). I presented views of the participants under this theme in a framework (see Figure 9).

**Figure 9**

Virtualized Effects of National Health Insurance Scheme



**Theme 4: Complex Adaptive Systems.** The fourth theme that emerged when I interviewed participants on the strategies that could improve the quality of the healthcare system is the use of a complex adaptive system. A complex adaptive system can be defined as a converged system made up of individual agents who might act collectively

or independently to achieve the goal of the entire system (Sturmberg, 2018). According to some health researchers, in the healthcare system, a complex adaptive system within the healthcare system should be made up of patients, nurses, doctors, health administrators, hospital management, and every other health official present in the healthcare system, even the stakeholders (Dentoni et al., 2021; Guise et al., 2021; Ratnapalan & Lang, 2020).

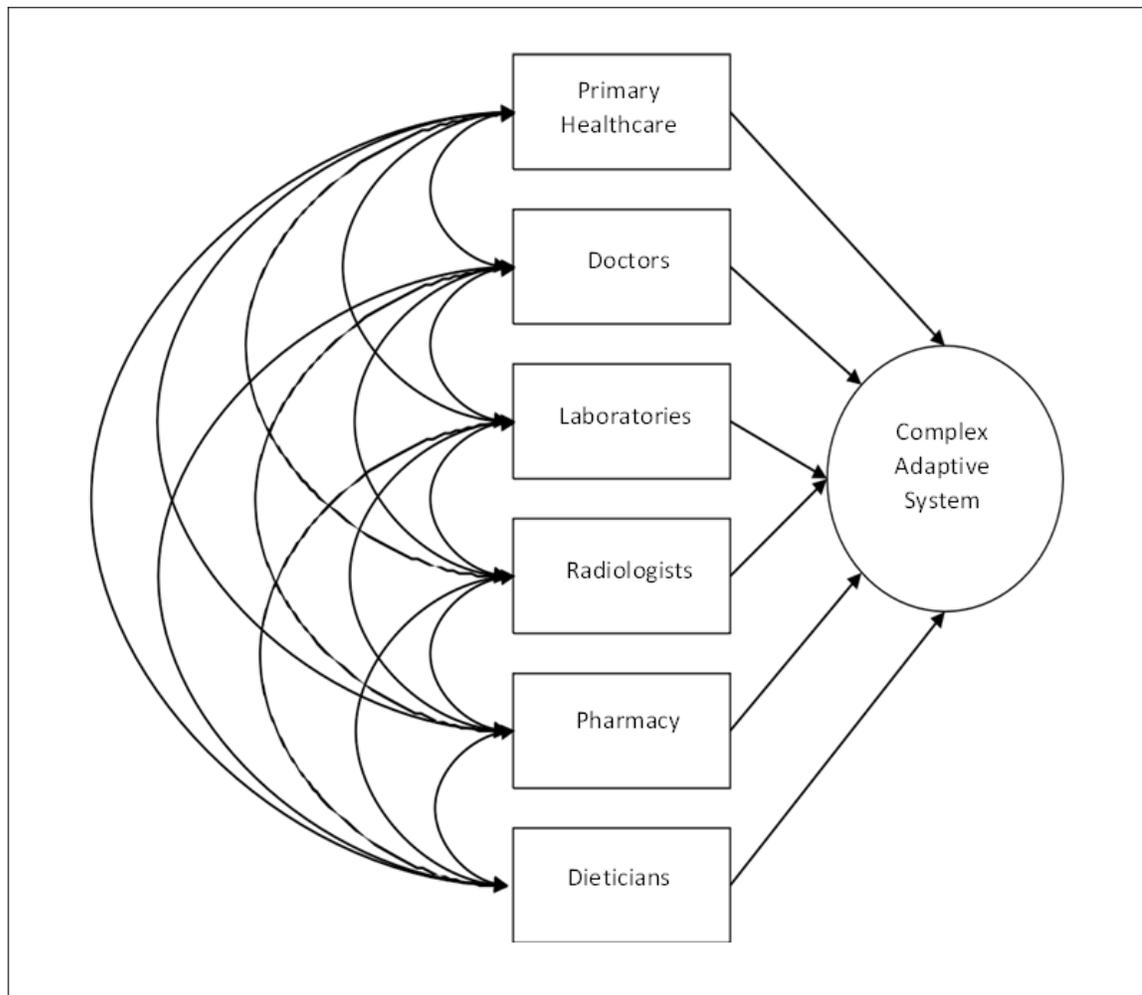
According to my research participants, “a one stop health service” is needed in the South African healthcare system, where there will be a collaboration among all healthcare workers, including nurses, doctors, pharmacists, radiologists, laboratories, and healthcare administrators. Participant 2 added that dieticians should be added in the cycle of complex adaptive systems, which will enable all the health agents to know the health history of all patients for easy diagnosis and management. He added that “A complex adaptive system is very good and important for unifications of the healthcare system, and it’s already being used in some developed countries.” Participant 5 has a similar view to that of Participant 2, and stated, “A complex adaptive system will connect all the health facilities and improve patients’ turnaround time, you see ... this will improve the quality of care the patients receive”. While Participant 1 is of the opinion that a complex adaptive system will save time and energy for both patients and healthcare workers, Participant 3 added that “the South African healthcare system truly needs a complex adaptive system to have a super-duper operational healthcare system in place.” Participant 3 mentioned that some private hospitals (like Netcare Healthcare Company) have adopted some elements of a complex adaptive system, where the nurses, doctors, laboratories, and

pharmacists are all connected through an electronic health management system. They capture and record the patients' information in real time. There is no paperwork, rather the doctors view every symptom the nurses have recorded for patients, real time; the laboratories do not need any referral letter; the pharmacy does not need any paper prescription from the doctor, because the medication prescribed for the patients will be seen by the pharmacy in real-time. He added that the entire South African healthcare system can adopt such a complex system of treatment and prescriptions.

The responses from all the participants point to the effectiveness of the healthcare system; should there be unification of the entire healthcare workers; there will be time, energy, and cost savings. The participants believe that if time, energy, and cost in the healthcare system are optimally utilised, the outcome will eventually be profitability and high quality of the healthcare system at the long run. Participant 4 made a remarkable comment that is connected to Theme 1 (telemedicine); he stated, "a complex adaptive system is compulsorily needed before telemedicine will even work in any country." Moreover, from a theoretical point view, all the themes from this research that relate to quality and profitability of the healthcare system are based on the complex adaptive system. For instance, the telemedicine, point of care, and national health insurance cannot be effective without unified agents of the healthcare system.

**Figure 10**

Proposed Complex Adaptive System in South African Healthcare System



### **Challenges to a Quality, Cost-Effective, and Profitable Healthcare Delivery System**

During the interview, I asked the participants if they have encountered any challenges during implementation, or during the plans to implement any of the strategies they mentioned. The participants stated that some of the strategies they identified to improve the quality of healthcare system are not yet adopted/implemented by the South African healthcare sector, for instance, the national health insurance scheme. However,

some of the strategies have been adopted partially in some segments of the healthcare sector, for instance, some elements of a complex adaptive system are adopted by the Netcare healthcare company, and some elements of telemedicine are adopted by the Dis-Chem pharmacy group.

However, the participants identified four major themes of challenges they encountered (or will encounter) during the implementation of the strategies they identified in Table 3. The four major themes that emerged are show-cased in Figure 11 through Pro Word Cloud. The Pro Word Cloud recorded the top 50 words when I addressed interview question 4. The four themes that emerged are: poor patients' health education, legal and ethical burdens on medical professionals, quality of primary healthcare, and individual differences among the healthcare practitioners.

**Figure 11**

Challenges on Strategies That Will Improve South African Healthcare System



Some of the participants lamented that some patients do not have any basic health awareness, therefore it is difficult for them to follow instructions during the telemedicine process. Some of them are not able to explain the symptoms of their illnesses, therefore making it difficult for the nurses and doctors to diagnose them virtually.

Second, according to all the participants, although legal and ethical requirements are essential in the healthcare practices, the legal and ethical practices required of the nurses and doctors are excessively high in South Africa, creating unnecessary bottlenecks that hinder a smooth and effective flow of healthcare delivery. The excessive application of such legal and ethical restrictions places a burden on the health workers, that some of them lose confidence in what they do, due to the fear of violating ethical requirements; thereby, slowing down the entire healthcare system. This fear of ethics makes nurses continue to refer patients to doctors (general practitioners), and general practitioners continue to refer patients to specialists, thereby stagnating primary healthcare delivery. Such illnesses with series of referrals are cases that would have been sorted out at the level of primary healthcare. Moreover, such cycle of referrals will place a burden on the National Healthcare Insurance Fund (NHIF), thereby leading to low quality and decreased profits within the healthcare system.

Third, all the participants also emphasized that the quality of primary healthcare delivered in South Africa is substandard, that it cannot be relied upon as a primary point of care. The primary healthcare should have been the first point of call by patients with minor illnesses, but almost every patient rushes to clinics, general practitioners, and hospitals at any slightest form of illness. This is because the primary healthcare, which

should have been the first point of care, is not equipped to attend to minor illnesses and emergencies due to gross mismanagement of public funds. Such patients burden the hospitals and doctors with illnesses that should have been treated at primary healthcare.

Fourth, the participants stressed the fact that there are so many differences among the healthcare workers who are supposed to act as agents of the complex adaptive system. The healthcare workers (i.e., agents of the complex adaptive system) come from different family, cultural, religious, and ethnic backgrounds; therefore, they might find it difficult to integrate and work as a complex system (as per Figure 10). More so, they will have different ideas and different approaches to innovation and new processes. Without such integration and unification, achieving complete implementation of a complex adaptive system will be impossible.

### **Applications to Professional Practice**

Quality and cost-effective healthcare system is paramount in every country. This is in line with previous literature that fundamental improvements and restructuring are needed for healthcare delivery coverage, including healthcare delivery cost controls to ensure the efficient use of healthcare delivery resources and bring expenditures into closer alignment with available resources for a sustainable healthcare system (Asante et al., 2019; Kim et al., 2020). The results of this study supplement those of Asante et al. (2019) and Kim et al. (2020), via all the themes, that a sustainable healthcare system can only be achieved through adoption of the strategies (themes) identified by my participants.

The first theme was telemedicine, and responses from my participants are related to existing research findings on telemedicine. There has been proof that healthcare practitioners employed the telemedicine model to improve the healthcare system in so many ways (Bashshur et al., 2020; Butzner & Cuffee, 2021; Lokken et al., 2020). For instance, in the cases of accidents and COVID-19, when a person sustains injuries, an applicable method of transport and telemedicine for immediate care will make a substantial difference in the patient's survival (Zughni et al., 2020). From the South African point of view, Dis-Chem pharmacy (one of the biggest pharmacy groups in South Africa) has adopted an element of telemedicine. In Dis-Chem, a patient can consult a nurse through an electronic system; after diagnosis, such patient will be referred to a doctor or specialist electronically. The doctor can as well refer the patient to a pharmacist, who will deliver medication/s to the patient. This method was much effective during the global lockdown due to the COVID-19 pandemic.

The second theme was point-of-care testing by healthcare practitioners. There have been airborne diseases, illnesses, and pandemics that require immediate detection before they become infectious to other people (Noah & Ndangili, 2019). For instance, tuberculosis, HIV, and the most recent COVID-19, that devastated the global healthcare system, are examples of diseases that require immediate detection and treatment. With the devastating effect of all these dreadful and infectious diseases on the global healthcare system, on the economy and on the social well-being of individuals, health researchers have argued that there is a need to implement an intelligent real-time strategy for early detection of infectious diseases and treatment at site, if need be (Wang et al.,

2021). This argument has led to the development of the innovative and novel point-of-care diagnostics (Wang et al., 2021). The argument is in line with the views of all my participants that point-of-care testing will save lives, reduce costs, and improve the quality of the healthcare delivery system in South Africa.

Theme 3 was the adoption and implementation of a national health insurance scheme. The responses by my participants are in line with Marten et al. (2014), who argued that the South African healthcare system remains deeply segregated, with private health insurers covering the rich, while poor individuals are left with no option than to depend on the poorly resourced public healthcare services (Marten et al., 2014). Studies have shown that as at 2011, among the BRICS member countries, South Africa has the lowest life expectancy, highest maternal mortality ratio, highest prevalence of HIV among adults, as well as the highest probability of death through chronic diseases (Marten et al., 2014; Romaniuk et al., 2020). In addition to these health challenges, disparities in health status across race, geographical areas, social-economic, and rural-urban status hugely exist in South Africa. Therefore, the adoption of national health insurance scheme might be a major mitigating factor to these disparities in healthcare status.

Theme 4 was the complex adaptive system, where participants explained the benefits of having a complex adaptive system in South Africa. From previous studies, there are discovered benefits of implementing complex adoptive system in the healthcare industry, those benefits are in line with the responses from my research participants (Gossett et al., 2019; Padgett et al., 2017). For instance, according to Padgett et al.

(2017), a complex adaptive system reduces or eliminates fixed and redundant costs that are not, or are less related to quality or profitability, rather cost is channeled to new innovations, new ideas, and new processes; thereby, achieving a sustainable healthcare system. Complex adaptive system also facilitates innovation and creativity; for instance, it can facilitate the adoption and incorporation of telemedicine, point-of-care testing, and a national health insurance scheme. Participant 4 referred to the incorporation of telemedicine into a complex adaptive system when he emphasized that without a complex adaptive system, telemedicine will not work. With new ideas and new processes due to the use of complex adaptive system in the healthcare industry, there will be an increase in patients' satisfaction and trust in the healthcare system. If the use of a complex adaptive system is efficiently deployed, all agents will be interconnected, and an agent's action affects the context and outcome of the entire system (Dentoni et al., 2021); therefore, there must be an atmosphere of knowledge and understanding environments for all agents to ensure effective adoption and use of a complex adaptive system. To actualize this atmosphere of knowledge, I intend to share the results of my study through a peer reviewed journal article.

### **Implications for Social Change**

I identified some anticipated implications of social change in section 1 of this study, including increased profits within the healthcare system through effective implementation of strategies that will positively affect healthcare delivery systems. Those increased profits could also enable healthcare delivery businesses to participate in more community-based charitable organizations such as providing subsidies that can alleviate

healthcare costs and developing clean water sources or sewage disposal systems for low-income communities to benefit both families and the entire communities. This will in turn lower morbidity rates due to improved access to clean water and healthcare. An additional possible benefit from the result of this study is that an affordable healthcare system will increase access to healthcare services by the poor, including those in the remote and rural communities. This is in line with the assertions by Marten et al. (2014), that low quality, high cost, and unaffordable healthcare delivery, which does not benefit these rural inhabitants, is socially undesirable.

In poorer populations and middle-low-income countries, sustainable quality and cost-effective healthcare delivery can be a myth. According to Wakerman and Humphreys (2019), since the 1990's, there has been an increased quest to achieve quality, profitable, cost-effective, and sustainable healthcare delivery, especially to the rural populations. Regrettably, only about 7% of most developing countries' rural populations (for instance - China and South Africa) have healthcare insurance and can afford access to healthcare practitioners, therefore, access to adequate quality healthcare (Blumenthal & Hsiao, 2015; Meng, et al., 2019). However, only the rich can afford to have health insurance schemes and are able to access the well-equipped private healthcare practitioners, while the poor populations are left with no option than to depend on the poorly resourced public healthcare services (Marten et al., 2014). The results from my study will enable the government to hasten the adoption of national health insurance plans to enable the poorer populations of South Africa to have access to good healthcare

facilities, which will in turn impact positively on the country's healthcare delivery system (See Figure 9).

Furthermore, the results from this study may enable the South African government to propose and adopt those identified strategies that can improve the quality of the healthcare system, which has been proven in existing literature, for instance the adoption of telemedicine which has been proven to be effective in some countries and gained attraction in recent time (Lokken et al., 2020). More so, the results will enable the government to understand the need for complex adaptive systems as a means of achieving a cost-effective and quality healthcare system.

### **Recommendations for Action**

During the interview the participants identified some challenges that impede adoption of strategies that could foster quality, cost-effective, and profitable healthcare systems. There are four basic recommendations based on those identified challenges. The first recommendation for action is to ensure platforms and avenues to provide basic health education to the poorer communities of South Africa. Such training and awareness can be inexpensive and might cost the government less, compared to the cost of health ignorance, therefore the results of this study will be presented at healthcare conferences in South Africa.

The second recommendation is on the legal and ethical requirements for healthcare workers while carrying out their professional duties. The health professionals are required to meet up with some high legal and ethical standards in the healthcare industry. The fear of ethics compliance makes them to lose confidence in themselves and

may decide to refer patients from one medical specialist to the other. This burdens both the healthcare workers and the hospitals, because while the healthcare workers develop phobias for prescription and basic treatment, the specialists are overburdened with minor illnesses rejected by the point-of-care testing system. A slight relaxation of some of the restrictions can improve the efficiency of healthcare delivery in a particular setting. A good example is the Ohio House Bill, 523 that established the Ohio Medical Marijuana Control Program to allow licensed healthcare practitioners to certify patients for the use of medical cannabis (Leeds et al., 2020). According to Leeds et al 2020, this is an online service bill that promotes a range of values in healthcare delivery to both patients and the healthcare practitioners, as well as benefits such as, enhanced patient security and improved direct relationship-building between patients and healthcare practitioners. Therefore, this study recommends that governments should relook into, and effectively relax some excessive legal and ethical requirements, which will improve health workers' confidence and reduce unnecessary harassment and burden on the medical specialists. The results of this study will be published in medical journals for ease of access.

The third recommendation for action is the improvement of the primary healthcare system. The basic primary healthcare in South Africa, especially the government owned facilities, attends to most of the South African population, and it is chronically underfunded, short-staffed, and undermined (Booyesen & Gordon, 2020). For effective adoption of the identified strategies to improve the quality of the healthcare system in South Africa, the government should improve the quality of primary healthcare, providing infrastructure and medical equipment needed for efficient operation

of the primary healthcare delivery services. One of the challenges of telemedicine application and complex adaptive system is poor infrastructure, including inefficient performance, service quality, and computer self-efficacy (Rahi et al., 2021). Research has also shown that telemedicine applications, especially tele-cardiology, have been poor in emerging market economies, including Africa (Chitungo et al., 2021; Mbunge et al., 2022); therefore, the government of South Africa should step up the game in healthcare infrastructure deployment to be able to adopt all four strategies of the quality healthcare system identified in this study.

The fourth recommendation is the mitigation of individual differences among healthcare workers (i.e., agents of the complex adaptive system). One of the strategies for an effective complex adaptive system is unification and interconnectedness of the agents involved in the complex adaptive system (see Figure 10). Because the agents come from different backgrounds, they will have different ideologies and different ideas towards innovation and processes; there is a need to implement a unification strategy to ensure integration and interconnectedness of the medical agents involved in a complex adaptive system. From the results of this study, I recommend the adoption of total quality management (TQM) to ensure efficiency of the strategies towards quality healthcare delivery. TQM is a people-focused management system that ensures continued and increased customer satisfaction at a relatively, repeatedly, and retrogressively lower cost (Alzoubi et al., 2019; Alzoubi, et al., 2022; Daqar & Constantinovits, 2020; Gupta & Mittal, 2021). Most importantly, for an effective TQM, the government and healthcare delivery practitioners should follow the principles of TQM identified by Patel (2009).

The principles include customer focus, strategic planning and leadership, continued improvement and learning, empowerment and teamwork, process management, effective tools for process management, and quality assurance and control. More so, to ensure progression and sustainability of TQM, the government and other healthcare practitioners should always monitor the factors that drive TQM, which include top management commitment, employee involvement, customer satisfaction, teamwork, processes, and continual improvements (Daqar & Constantinovits, 2020). However, despite all the mentioned approaches, to ensure an effective complex adaptive system, and effective TQM, an enabling environment that would house creative ideas must be created by the government and other stakeholders in emerging market healthcare delivery systems, especially in South Africa.

Finally, public resources will be inclusively needed to carry out these recommended major reforms in the healthcare system, and a modest increase in government expenditure on healthcare delivery may be a possible resolution to improve the operations of the healthcare systems (Asante et al., 2019; Gharaee et al., 2019; Reich, 2020). However, a dilemma exists due to the level of structural and operational inefficiencies, including corruption in the low middle-income countries; it may be difficult to argue for major increases in funding, particularly in a very fragile emerging market country like South Africa. I recommend that the government also establishes an informed strategy to combat corruption and focus on improving the quality of the healthcare system, to ensure cost-effectiveness, profitability, and sustainability of the South African healthcare sector. Therefore, sharing the results of this study at healthcare

practitioner's congresses will make it attainable to government departments, as well as writing a peer reviewed article to achieve a wider reach.

### **Recommendations for Further Research**

The objective of this case study was to explore the strategies healthcare practitioners use to improve the mode, quality, and profitability of healthcare delivery in emerging markets. Recommendations for further research include, not limiting the participants to healthcare practitioners, who own private practices or are at a senior management level in the public healthcare institutions. The five participants in this study gave detailed explanation on the cost effectiveness of the healthcare facilities where they work, the challenges they face, and suggestions/strategies the stakeholders could implement to mitigate such challenges. However, expanding the study participants to other business managers who work within healthcare institutions may offer different perspectives to the theory of cost effectiveness within the South African healthcare system, or that of emerging market as a whole.

Secondly, I deployed the qualitative method in this study, where I used open-ended interview questions to gather information from the research participants on the cost effectiveness of healthcare practices in South Africa. Further research can deploy quantitative or mixed method research to include more samples and gather more information in this regard. With a different method and approach, further research may find and disclose more strategies to establish and maintain a cost-effective healthcare system in Africa, or in emerging markets, in general.

Lastly, there are limitations in my research. According to Ross and Zaidi (2019), limitations in research are elements of a study that are not under the control of the researcher, which may influence the outcomes and inferences of the study. In this doctorate study, I focused on healthcare facilities located in rural areas of Gauteng, one of the provinces in South Africa; therefore, this study might not be generalizable across all healthcare facilities in South Africa and emerging market. For a deeper understanding on the cost effectiveness of healthcare delivery in emerging markets, further research should be extended to other provinces of South Africa, or to other emerging market countries.

### **Reflections**

Having a master's degree, with rigorous research processes made me think that I was ready for a doctorate degree, I never knew that the two degrees are far apart in terms of processes and level of commitment. As a full-time entrepreneur, I thought I was ready for it and will have all the time to carry out the project without much hassle, but I was wrong. I truly did not realise that the journey would be this rough and tough, with detailed requirements for quality processes and output, along with unpredicted hiccups during such processes. However, when I look back through those processes, I am very thankful to my chair, Dr Deborah Nattress and to the Walden University as a whole. I took time to understand the process and to deploy some strategies that enabled me to meet the expectations of the doctorate journey.

The three most important skills you need to begin and complete a doctorate journey at Walden University are determination, attention to detail, and teamwork. The journey became smoother and easier when I learnt to pay more attention to little things,

including tiny prints of faculty guidelines, building strong team among my peers, participating in blackboard (canvas) discussions, and attending to all comments and feedbacks from blackboard (canvas) reviews. Most importantly, the faculty gave me maximum support, with timely responses to my concerns and inquires. Such support helped me to paddle the boat of my doctorate study smoothly. Therefore, to share the results of this study, I will also contact the publication support team from Walden departments to be able to access their publication dissemination resources.

### **Conclusion**

The purpose of this qualitative case study was to identify the strategies healthcare practitioners use to improve the quality and profitability of healthcare delivery to the rural Gauteng region of South Africa. According to Ng and Fong (2022), low quality, high cost, and unaffordable healthcare delivery, which does not benefit the rural inhabitants, is socially undesirable. Regardless, an affordable healthcare system will increase access to healthcare services by the poor, including those in the remote and rural communities.

To achieve the purpose of the study, I interviewed five participants; I also reviewed literatures and documents. Four themes emerged on the strategies to achieve a quality, cost-effectiveness, and profitable healthcare delivery in the South Africa. The identified strategies include the adoption of telemedicine, point-of-care testing, national health insurance scheme, and complex adaptive systems into the South African healthcare system. These themes are in line with existing literature, that the identified strategies have improved the mode of operation and effectiveness of healthcare systems in other

countries (Churruca et al., 2019; Dentoni et al., 2021; Mansour & Abdelrahim, 2019; Ramori et al., 2021).

Another four themes emerged on the challenges healthcare practitioners face in adoption of the identified strategies. The healthcare practitioners I interviewed are of the opinion that healthcare practitioners face many challenges, which hinder their efforts in achieving a quality and cost-effective healthcare system. The challenges include lack of health education to patients, excessive legal and ethical requirements on healthcare practitioners, poor quality of primary healthcare, and individual differences among healthcare workers. The participants opined that to achieve a cost-effective, and quality healthcare system, both the government and private sectors should mitigate the above identified challenges for ease of implementation of the strategies we identified in this study. I will share the results (the identified strategies) of this study through seminar presentations in South Africa and peer-reviewed journal articles. These strategies will, hence, be for the benefit of the rural communities as well as contribute to the overall quality of healthcare delivery within a specific ecosystem.

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### Appendix A: Interview Protocol Instrument

[Insert Name], thank you for taking time out of your busy schedule to volunteer to meet with me and participate in my doctoral research study regarding an emerging market study on strategies for cost effectiveness in sustainable healthcare delivery. The purpose of this qualitative case study is to identify the strategies healthcare practitioners require to improve the mode, quality, cost-effectiveness, and profitability of healthcare delivery to the rural Gauteng region of South Africa.

First, we will need to address the consent form. Please read the consent form, while I read it aloud. If you agree with the consent form, please sign and date the consent form. Please note that the interview will be recorded. Do you have any questions? If not, let us get started with the interview questions. If, at any time, I ask a question that you do not want to answer, please say "pass," and I will continue to the next question.

## Appendix B: Interview Questions

### Section A

1. How long has the medical practice been in existence?
2. Do you have another branch?    Yes    No
3. How many more branches do you have?

### Section B

1. What mode of healthcare delivery model strategies have you found effective in improving the quality of healthcare?
2. What mode of healthcare delivery model strategies have you found effective in improving the cost effectiveness of the healthcare delivery process?
3. What mode of healthcare delivery model strategies have you found effective in improving the profitability/sustainability of healthcare delivery?
4. What are some of the challenges or obstacles you faced with models of healthcare delivery towards improving quality, cost effectiveness, or profitability of healthcare delivery?
5. What healthcare delivery model strategies have you used to improve quality, cost effectiveness and profitability of healthcare delivery?
6. Are there any healthcare delivery model strategies you tried that failed to improve the quality, cost effectiveness or profitability of healthcare delivery?
7. In your experience, are any of the healthcare delivery model strategies more effective in improving quality, cost effectiveness and profitability of healthcare delivery? Please elaborate.

8. Is there anything else you would like to share about healthcare delivery model strategies to improve quality, cost effectiveness, and profitability of healthcare delivery?

[Insert Name]; thank you for your time today. Thank you for this excellent information.

Did you bring any archival documents with you today? If so, I will take them at this time.

In the spirit of transparency, I want to let you know what the next steps in the process will be. I will transcribe the interview and write up a summary of each question. Once I have completed the transcription of the interview and have written the summaries, I will contact you to schedule another meeting for you to review the complete summary for the accuracy of your statements. Again, thank you for participating in my doctoral research study!