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Health Access for universal distribution of life saving drugs in South Africa

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Abstract

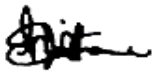
Access to essential medicines is a critical determinant of health equity and a prerequisite for achieving Universal Health Coverage (UHC). In South Africa, progressive policy instruments such as the Essential Medicines List (EML), Standard Treatment Guidelines (STGs), and decentralised initiatives like the Central Chronic Medicine Dispensing and Distribution (CCMDD) programme have been introduced. However, equitable access remains constrained by systemic inefficiencies and user-side barriers. This study adopts a qualitative, literature-based approach guided by the Levesque conceptual framework to examine how access is conceptualised and operationalised within the public health sector. Findings reveal persistent provincial disparities in medicine availability, recurrent stockouts, limited adoption of digital inventory systems, and user-level challenges including health literacy gaps, indirect costs, and reduced engagement with care. Comparative insights from low- and middle-income countries highlight the effectiveness of decentralised procurement, community-based delivery, and public-private partnerships in improving access. Policy recommendations include institutionalising Health Technology Assessment (HTA), investing in digital supply chain infrastructure, expanding community delivery models, and mitigating user-side burdens through targeted interventions. The study concludes that sustainable improvements in access require an integrated, equity-driven approach that strengthens system responsiveness while enhancing user agency.

Key Words:

Health access, Essential Medicines, Levesque framework, WHO Health Systems Building Blocks, 3A Model (Availability, Accessibility, Affordability), Supply Chain, policy, Universal Health Coverage, Stockouts, Procurement, Universal Health Coverage (UHC), Distribution systems, Digital inventory systems, Health Technology Assessment (HTA), Community-based delivery, Public-private partnerships, Decentralised procurement, Maternal health, Central Chronic medicine dispensing and distribution (CCMDD), Health equity, User-side barriers, Health workforce, Performance-based financing, Last-mile distribution, Health literacy

DECLARATION

I, Matome Makhwiting, declare that this research report is my own work except as indicated in the references and acknowledgements. The research report is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in this or any other university.

Name: Matome Makhwiting Signature: 

_____

Signed at Noordwyk on the 15th of December 2025

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Chapter 1: Introduction

1.1 Background

Access to essential medicines is a cornerstone of a functional health system and a fundamental element of the right to health, as recognised by the World Health Organization (WHO, 2023). These medicines address the priority health care needs of populations and should be consistently available in appropriate dosage forms, sufficient quantities, and at affordable prices. According to the WHO (2023), essential medicines are selected based on their relevance to ensuring good public health, clinical efficacy and safety, and comparative cost-effectiveness. Their consistent availability is crucial for achieving equitable and effective healthcare delivery.

In South Africa, essential medicines are formally defined and managed through the Essential Medicines List (EML) which is a central component of the country's National Drug Policy. (see Appendix 1 for the therapeutic areas covered by South Africa's Essential Medicines List). The EML is supported by Standard Treatment Guidelines (STGs) and is differentiated by levels of care, including Primary Health Care, Hospital Level (Adult and Paediatric), and Tertiary and Quaternary Care. Oversight and periodic updates are managed by the National Essential Medicines List Committee (NEMLC), which bases its decisions on factors such as clinical effectiveness, cost-efficiency, and alignment with national health priorities (National Department of Health [NDoH], 2020).

The most recent edition of the Primary Health Care EML, the 7th Edition published in 2020, is publicly available and outlines the standard medicines recommended for use in primary care settings across South Africa. The list classifies medicines by therapeutic area and includes essential information on dosage forms and indications. For higher levels of care, additional lists are maintained and regularly revised by the NDoH. These tools collectively aim to ensure medicine availability across all levels of the health system, support rational prescribing, and facilitate equitable access (National Department of Health, 2020). Despite the existence of these progressive frameworks, access challenges persist. Stockouts, procurement inefficiencies, supply chain disruptions, and disparities, particularly between urban and rural settings, continue to limit medicine availability (Gray & Suleman, 2021). These issues are

exacerbated by structural constraints, including unequal resource allocation, workforce shortages, and the legacy of apartheid-era health disparities (Benatar, 2013).

1.2 Problem Statement

Although South Africa has established robust policy frameworks and institutional mechanisms, equitable access to essential medicines remains a significant challenge. Recurring stockouts, especially in rural and under-resourced provinces, underscore systemic inefficiencies in procurement processes, logistical coordination, and policy implementation (Médecins Sans Frontières, 2019). These limitations undermine efforts to achieve Universal Health Coverage (UHC) and hinder the provision of quality, inclusive health care (WHO, 2021).

1.3 Research Aim and Objectives

This study examines access to essential medicines in South Africa through a literature-based analysis, with emphasis on distribution systems, policy effectiveness, and key barriers. The specific objectives are to assess the effectiveness of national policies and frameworks for essential medicine distribution, to identify major barriers to equitable access in the public health sector, explore existing and proposed strategies to improve access, and to evaluate the influence of supply chain governance, logistics, and financing on medicine availability.

1.4 Significance of the Study

This research contributes to the broader understanding of health system performance in South Africa by synthesising evidence on medicine access. By identifying systemic barriers and exploring strategic interventions, the study offers valuable insights for policymakers, public health professionals, and pharmaceutical stakeholders. The findings are particularly relevant in the context of the proposed National Health Insurance (NHI), which seeks to advance equitable access to medicines and health services (NDoH, 2021).

1.5 Scope and Limitations

This study is based exclusively on secondary data sourced from peer-reviewed academic publications, government documents, and reports by international

organizations. It focuses solely on the public health sector and does not include primary data collection. While comprehensive efforts have been made to incorporate the most recent and relevant literature, the conclusions are limited by the availability, scope, and quality of existing sources.

1.6 Structure of the report

Chapter 1 provides an overview of the research problem, the context in which the study is situated, and the objectives guiding the investigation. Chapter 2 presents a comprehensive literature review of existing studies focused on health access and drug distribution in South Africa, offering insights into key themes and gaps in the current body of knowledge. Chapter 3 outlines the research methodology that underpins the study, detailing the approach, data sources, and analytical techniques employed. Chapter 4 presents the data analysis and findings, interpreting the results in relation to the research questions. Finally, Chapter 5 summarises the main insights and policy recommendations emanating from the findings of this research.

1.7 Summary

This chapter contextualised the importance of essential medicines in health systems, particularly within the South African context. It outlined the country's current policies and persistent challenges affecting equitable access. The problem statement, research aim, and objectives were clearly defined, along with the study's significance in relation to health system reform under the proposed National Health Insurance. The scope and limitations of the research were also outlined, noting its reliance on secondary data.

In the next chapter, the literature on healthcare and essential medicine access will be critically reviewed. This includes examining conceptual frameworks, empirical evidence from South Africa, and lessons drawn from other low- and middle-income countries. The chapter will provide the theoretical and contextual foundation for the study, while introducing the Levesque framework as the core analytical lens.

Chapter 2: Literature Review

2.1 Conceptualising Access to Health Services

Access to healthcare is a foundational determinant of health equity and system performance. It encompasses the ability of individuals to obtain needed health services in a timely, affordable, and culturally appropriate manner. The World Health Organization (WHO, 2010) defines access as “the timely use of personal health services to achieve the best possible health outcomes,” underscoring its multidimensional and outcome-oriented nature.

Over the past four decades, several conceptual frameworks have been developed to better understand and measure access. One of the earliest and most influential is the Penchansky and Thomas (1981) model, which defines access as the “degree of fit” between patients and the healthcare system. This model outlines five interrelated dimensions, namely, availability, accessibility, affordability, accommodation, and acceptability. These dimensions have been widely applied in health services research and remain relevant in evaluating service delivery, particularly in resource-constrained settings (Saurman, 2016).

Building on this foundation, Levesque et al. (2013) introduced a more dynamic and patient-centred framework that integrates both supply-side and demand-side factors. Their model conceptualises access as a process involving five dimensions of healthcare services; namely, approachability, acceptability, availability and accommodation, affordability, and appropriateness, and five corresponding user abilities: to perceive, seek, reach, pay for, and engage with care. This dual perspective allows for a more nuanced understanding of how structural barriers and individual capabilities interact to shape access outcomes. The Levesque framework has been widely adopted in empirical studies and tool development, particularly in low- and middle-income countries (Cu et al., 2021).

While the Levesque et al. (2013) framework offers a dynamic, patient-centred lens for understanding access, other models provide valuable complementary perspectives. The WHO Health Systems Building Blocks Framework conceptualises health system performance through six core components: service delivery, health workforce, health

information systems, access to essential medicines, financing, and leadership and governance (World Health Organization, 2010). This framework is particularly useful for diagnosing structural determinants of access, such as supply chain inefficiencies and resource allocation gaps.

In addition, the 3A Model, which focuses on availability, accessibility, and affordability, provides a simplified equity-oriented lens for evaluating whether medicines are physically present, whether patients can reach them without undue burden, and whether costs are manageable (Burger & Christian, 2020). Integrating these models alongside Levesque's multidimensional approach enables a more holistic analysis of access by combining system-level determinants with user-centred dynamics.

Other frameworks have also contributed to the discourse. Andersen's Behavioural Model of Health Services Use views access as a function of predisposing characteristics, enabling resources, and perceived need (Andersen, 1995). While useful for understanding utilisation patterns, Andersen's model has been critiqued for its limited attention to systemic and experiential barriers (Aday & Andersen, 1974). Similarly, Frenk's (1992) framework emphasises the interaction between health system functions and population needs but lacks the granularity offered by more recent models.

Recent literature has also called for the inclusion of time-related dimensions such as waiting times and continuity of care as critical components of access (Cu et al., 2021). Moreover, scholars have argued for the integration of awareness as a sixth dimension as in the Penchansky and Thomas model, recognising that knowledge of available services is a prerequisite for effective access (Saurman, 2016).

In the South African context, these frameworks are particularly relevant given the country's dual burden of disease, geographic disparities, and ongoing health system reforms. Applying a multidimensional lens to access enables a more comprehensive diagnosis of barriers and informs targeted interventions that align with the principles of Universal Health Coverage (UHC).

2.2 Access to Essential Medicines as a Core Component of Health Access

Access to essential medicines is widely recognised as a critical determinant of health equity and a fundamental component of the right to health (World Health Organization [WHO], 2023). These medicines are intended to address the priority health needs of populations and must be available in adequate quantities, appropriate formulations, and at prices that are affordable to both individuals and health systems (WHO, 2023). Despite this normative consensus, access to essential medicines remains a critical global health challenge. It is estimated that nearly two billion people worldwide lack regular access to essential medicines, particularly in low- and middle-income countries. This lack of access is often attributed to factors such as unavailability, unaffordability, inaccessibility, poor acceptability, and substandard quality of medicines (Ozawa et al., 2019; World Health Organization [WHO], 2024).

In South Africa, the Essential Medicines List (EML) and Standard Treatment Guidelines (STGs) serve as the primary instruments for ensuring equitable access within the public sector. These tools are designed to promote rational medicine use, streamline procurement, and align treatment protocols with national health priorities (National Department of Health [NDoH], 2020). Persistent implementation challenges such as supply chain inefficiencies, uneven facility readiness, and limited adoption of digital inventory systems continue to hinder the effectiveness of essential medicine programs. Evidence highlights systemic weaknesses in procurement processes, infrastructure gaps, and inadequate information management as key contributing factors (World Health Organization [WHO], 2023).

Globally, the availability and affordability of essential medicines remain below WHO's 80% target in both public and private sectors, particularly in LMICs (Oldfield et al., 2025). A recent cross-country analysis by WHO and Health Action International revealed that even lowest-priced generics are often unaffordable, with patients in some regions required to pay several days' wages for a single course of treatment (WHO, 2025). These findings are echoed by Ocran Mattila et al. (2021), who found that access to anti-cancer medicines in LMICs is constrained by high prices, limited availability, and weak regulatory oversight.

Beyond pricing, structural barriers such as underfunded health systems, fragmented procurement processes, and inadequate human resources further restrict access (Mooney, 2024). In many low- and middle-income countries, including South Africa, medicine stockouts are driven by poor demand forecasting, shortages of trained pharmaceutical personnel, and reliance on manual inventory systems. These systemic weaknesses in procurement and supply chain management have been widely documented (Nemutandani et al., 2020; World Health Organization [WHO], 2023).

Operational inefficiencies are further compounded by global market factors, including intellectual property restrictions and inadequate local manufacturing capacity, which limit the availability of affordable generic medicines (World Health Organization [WHO], 2025). Efforts to improve access must therefore address both supply-side and demand-side constraints. WHO's four-part framework for equitable access; namely selection, affordability, sustainable financing, and reliable health systems, provides a comprehensive roadmap for national policy action (WHO, 2004). In South Africa, this implies not only strengthening procurement and distribution systems but also enhancing regulatory capacity, supporting local production, and ensuring that medicines are culturally acceptable and appropriately used.

In summary, access to essential medicines is not merely a logistical challenge but a multidimensional policy issue that intersects with broader questions of health system governance, financing, and social justice. Addressing these challenges requires coordinated action across sectors and sustained political commitment to equity-driven reform.

2.3 Addressing the Research Questions Through Literature

This section synthesises existing literature to address the study's core research questions: (1) how access to essential medicines is measured? (2) what the current state of access is in South Africa? and (3) what policy implications emerge from these findings?

2.3.1 Measuring Access to Essential Medicines

The assessment of access to healthcare and medicines has shifted from simple, single-dimension indicators to multidimensional frameworks. While traditional measures such as facility density, medicine availability, and service utilisation remain

relevant, they are increasingly complemented by qualitative aspects, including user satisfaction, cultural acceptability, and perceived quality (Levesque et al., 2013; Cu et al., 2021). Burger and Christian (2020) propose a streamlined framework that combines Penchansky and Thomas's five dimensions into three domains; namely availability, affordability, and acceptability, then apply it to the 2009 and 2010 South African General Household Surveys. They report that only 53% of respondents achieved comprehensive healthcare access, with affordability and availability emerging as the most significant barriers.

Gordon et al. (2020) used decomposition analysis of SANHANES-1 (South Africa's first Nationally representative Health and Nutrition Examination Survey) data to show that socio-economic inequalities in healthcare access are largely driven by affordability and perceived need. Their findings indicate that traditional indicators may underestimate barriers among marginalised populations, particularly when factors such as health literacy and cultural alignment are overlooked. The Health Quality Assessment (HQA) initiative has also contributed to access measurement by developing national benchmarks for clinical quality and service delivery across medical schemes (HQA, 2024). Although focused on the private sector, these indicators offer valuable insights into the structural determinants of access and can inform public-sector reforms.

2.3.2 Current State of Access in South Africa

Despite progressive policies such as the Essential Medicines List and the National Drug Policy, access to essential medicines in South Africa remains uneven. Perumal-Pillay and Suleman (2017), and Gray and Suleman (2021) report persistent provincial disparities, with rural and peri-urban areas experiencing the highest stockout rates. These gaps are linked to weak supply chain governance, insufficient human resources, and inconsistent application of Standard Treatment Guidelines. Leong et al. (2024) highlight the influence of economic evaluations on medicine access, showing that cost-effectiveness and budget impact analyses informed the inclusion of high-cost medicines such as flucytosine and bortezomib in South Africa's Essential Medicines List. They note that the absence of a standardised Health Technology Assessment process before 2022 limited the consistency of these decisions.

South Africa's dual health system, where a well-resourced private sector serves a minority while the public sector remains overstretched, continues to exacerbate inequities (McIntyre & Ataguba, 2017). Public-sector patients often face long travel distances, indirect costs, and limited-service hours, reducing their ability to access medicines even when technically available (Burger & Christian, 2020; World Health Organization [WHO], 2023).

2.3.3 Policy Implications

The literature emphasises the need for integrated, equity-oriented policy responses. Common recommendations include strengthening supply chains, decentralising distribution, and institutionalising health technology assessment (Leong et al., 2024; Mooney, 2024). Centralised approaches (including pooled procurement) often achieve economies of scale, stronger supplier management, and harmonised standards; they are therefore favoured for high value, widely used categories such as essential medicines and vaccines (WHO, 2021; Mathauer et al., 2017). Yet empirical syntheses show mixed results: while price reductions and improved quality assurance are achievable, legal and regulatory alignment and sustained financing are preconditions that are frequently absent in LMIC settings (WHO, 2021). Equally, narrative and systematic reviews document that decentralised purchasing can enhance agility and local fit, but risks fragmentation, maverick buying, and inequitable access when subnational capacity is weak (Sapkota et al., 2023; Sumankuuro et al., 2023). A growing consensus therefore supports hybrid ("centre led") models that centralise strategic categories and standards while devolving routine, context specific procurements to subnational purchasers (Sapkota et al., 2023; Sumankuuro et al., 2023). Additionally, improving health literacy and aligning services with user preferences are critical for enhancing acceptability and appropriateness of care (Saurman, 2016; Gordon et al., 2020).

South Africa's proposed National Health Insurance (NHI) offers a potential platform for addressing these challenges. However, its success will depend on the extent to which it incorporates multidimensional access indicators, supports decentralised service delivery, and ensures transparent, evidence-based decision-making (National Department of Health, 2022).

2.4 Lessons from Case Studies in Other LMICs

Comparative case studies from low- and middle-income countries (LMICs) offer valuable insights into the structural and policy mechanisms that can enhance access to essential medicines. These examples highlight the importance of decentralised governance, community-based service delivery, and innovative procurement models in addressing both supply- and demand-side barriers.

2.4.1 Brazil: Public–Private Partnerships and Subsidised Access

Brazil's *Farmácia Popular* programme is widely regarded as an effective public-private partnership that enhances access to essential medicines for low-income populations. By subsidising selected medicines through accredited private pharmacies, the initiative significantly expanded coverage for chronic conditions such as hypertension and diabetes. Evidence from Emmerick et al. (2015), based on national household survey data and interrupted time-series analysis, indicates that the programme reduced out-of-pocket expenditure on antihypertensive and antidiabetic medicines by up to 60%, while improving treatment adherence among enrolled patients. The success of Brazil's *Farmácia Popular* programme is widely attributed to its integration with the Unified Health System (SUS), transparent pricing mechanisms, and strong regulatory oversight. These structural features have enabled the programme to expand access to essential medicines through accredited private pharmacies while maintaining affordability and quality standards (Emmerick et al., 2015; Emmerick et al., 2020; Ivama-Brummell et al., 2023). Collectively, these factors position *Farmácia Popular* as a scalable model for other low- and middle-income countries seeking to strengthen pharmaceutical access within universal health coverage frameworks.

2.4.2 Rwanda: Community Health Workers and Decentralised Care

Rwanda's health system reforms have centred on decentralisation and the strategic deployment of community health workers (CHWs), who serve as the first point of contact in rural areas by delivering basic health services and distributing essential medicines (Binagwaho et al., 2014; Condo et al., 2014). Evidence suggests that the CHW model has contributed to significant improvements in maternal and child health outcomes and increased medicine coverage in hard-to-reach areas (Binagwaho et al., 2014; Lu et al., 2012). The programme's effectiveness is underpinned by strong government stewardship, performance-based financing, and integration with national

supply chains, which have collectively strengthened service delivery and access to essential medicines (Lu et al., 2012; USAID, 2015).

2.4.3 Ghana and Tanzania: Decentralised Procurement and Facility Autonomy

Decentralised procurement models in low- and middle-income countries have demonstrated potential to improve medicine availability and responsiveness to local needs. In Ghana and Tanzania, pilot programmes granting primary health facilities autonomy to procure medicines from pre-approved suppliers under centrally negotiated price contracts significantly reduced stockouts and enhanced supply chain flexibility, provided that robust forecasting and financial management systems were in place (Nepomnyashchiy & Yadav, 2022). Evidence from these initiatives underscores that success depends not only on facility-level autonomy but also on strong regulatory frameworks, transparent pricing mechanisms, and technical support from central authorities to maintain accountability and prevent procurement inefficiencies (Nepomnyashchiy & Yadav, 2022; Health Systems Trust, 2023). These findings align with broader literature on decentralisation, which highlights that such reforms are most effective when paired with capacity-building and integrated information systems to ensure sustainability and equity in access (Gray & Suleman, 2021; Mooney, 2024).

2.4.4 Pakistan and Mongolia: Regulatory Gaps in Local Production

Case studies from Pakistan and Mongolia illustrate the risks posed by weak regulatory oversight in local pharmaceutical production. In Pakistan, 26% of essential medicines were unregistered with the national drug authority, undermining quality assurance and public trust (Rafi et al., 2021). Similarly, in Mongolia, unregistered medicines were more common in rural areas, deepening geographic inequities in access (Khurelbat et al., 2020). These findings highlight the need for harmonised regulatory systems and investment in quality control infrastructure.

2.4.5 Cameroon: Performance-Based Financing and Supply Chain Efficiency

Performance-based financing (PBF) has been introduced in several low- and middle-income countries as a strategy to enhance health service delivery and medicine availability by linking financial incentives to measurable performance indicators. In Cameroon, facilities received payments based on service delivery metrics, including essential medicine stock levels, with the aim of improving supply reliability and accountability (Sieleunou et al., 2019). Evidence indicates that PBF contributed to

perceived improvements in medicine availability and strengthened governance mechanisms; however, its impact was constrained by systemic supply chain weaknesses such as inadequate logistics infrastructure and shortages of trained personnel, necessitating complementary investments in these areas (Sieleunou et al., 2019; Mooney, 2024).

2.4.6 Kenya: Community-Level Stockouts and Last-Mile Distribution

Kenya's experience with community health workers (CHWs) illustrates the persistent challenge of last-mile medicine distribution in low-resource settings. A systematic review by Olaniran et al. (2022) reported that CHWs faced stockouts nearly one-third of the time, with shortages worsening over the past decade. These gaps were primarily linked to weak integration with primary health centres, inadequate supervisory structures, and fragmented supply chains (Olaniran et al., 2022). Broader evidence confirms that CHW effectiveness depends on reliable upstream supply systems, robust logistical support, and strengthened coordination mechanisms to ensure sustainability (WHO, 2023; von Pressentin et al., 2023).

2.5 Using the Levesque Conceptual Framework as an Analytical Lens

Levesque et al. (2013) present a comprehensive and dynamic framework for analysing access to healthcare by examining the interface between health systems and populations. Unlike earlier models that focused primarily on structural determinants or patterns of utilisation, this framework adopts a dual perspective. It identifies five dimensions of healthcare service accessibility; namely, approachability, acceptability, availability and accommodation, affordability, and appropriateness, and pairs them with five corresponding user abilities: to perceive, seek, reach, pay for, and engage with care. This structure enables a nuanced understanding of how systemic characteristics interact with individual and community capabilities to shape access outcomes.

The strength of the Levesque framework lies in its ability to capture both supply-side and demand-side dynamics, making it particularly relevant for evaluating access in low- and middle-income countries (LMICs), where barriers are often multidimensional and context-specific (Cu et al., 2021). In South Africa, access to healthcare may be hindered by low health literacy, while the ability to reach services is constrained by

geographic and infrastructural disparities, particularly in rural provinces (Gordon et al., 2020). At the same time, systemic issues such as medicine stockouts and limited clinic hours affect the availability and accommodation of services (Gray & Suleman, 2021). Empirical applications of the Levesque framework demonstrate its versatility across diverse healthcare contexts. A scoping review by Cu et al. (2021) identified 31 studies that employed the framework to develop access assessment tools or analyse qualitative and quantitative data. These studies encompassed areas such as maternal health, chronic disease management, and mental health services. Notably, 73% of the tools were designed from the patient perspective, underscoring the framework's emphasis on user experience and agency (Cu et al., 2021).

In South Africa, the Levesque framework has been applied to evaluate access to antiretroviral therapy, maternal health services, and chronic medicine distribution programmes such as the Central Chronic Medicine Dispensing and Distribution (CCMDD) initiative. Evidence from qualitative studies indicates that while CCMDD has improved convenience and adherence for patients with stable chronic conditions, significant barriers persist in service availability, user acceptability, and continuity of care (Bogart et al., 2022; Dorward et al., 2020). These studies demonstrate how the Levesque framework can identify gaps in both service delivery and user engagement, revealing mismatches between health system responsiveness and patient needs.

Addressing these gaps requires strengthening supply-side mechanisms, including reliable stock management and distribution, alongside demand-side factors such as patient awareness and engagement (Bogart et al., 2022; Dorward et al., 2020). Moreover, the Levesque framework aligns with the principles of Universal Health Coverage (UHC) by emphasising that access entails not only service availability but also equity, responsiveness, and user empowerment (WHO, 2010). Its utility has been demonstrated through its incorporation into national and subnational health monitoring instruments; for example, a scoping review identified 31 empirical applications, including in policy evaluation tools, indicating active efforts to integrate the framework into health system assessments (Cu et al., 2021).

While the Levesque framework has gained considerable support, scholars have identified opportunities for refinement. Cu et al. (2021), for instance, highlight that the

framework would benefit from integrating time-related dimensions such as waiting times and continuity of care which significantly influence patient engagement and satisfaction. Moreover, intersectionality scholars argue that access is not experienced uniformly; instead, it is shaped by the interaction of social categories like gender, socioeconomic status, disability, and race (Mothupi et al., 2023).

2.5A Complementary Conceptual Models

WHO Health Systems Building Blocks**:** The World Health Organization's Health Systems Building Blocks framework conceptualises health system performance through six components: service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership/governance. This model is widely applied in health systems research and is particularly useful for diagnosing structural determinants of access, such as stock management, workforce shortages, and governance gaps that underpin medicine availability (World Health Organization, 2010).

3A Model (Availability, Accessibility, Affordability): The 3A model provides a parsimonious, equity-oriented lens to prioritise policy levers: whether medicines are physically present, reachable without undue burden, and financially manageable. As a complement to Levesque's multidimensionality, the 3A model's simplicity supports clear mapping of observed barriers to actionable interventions (Burger & Christian, 2020).

2.5B An Integrated Conceptual Framework for This Study

This study employs Levesque et al. (2013) as the primary analytical lens to capture the interaction of service attributes and user abilities. To deepen system diagnostics and sharpen policy relevance, it integrates the WHO Building Blocks (to locate structural causes of access barriers across service delivery, workforce, information, medicines, financing, and governance) and the 3A model (to foreground availability, accessibility, and affordability as equity targets). This integrated framework supports a multi-level analysis: (1) how barriers manifest for users (Levesque), (2) where they originate in the system (Building Blocks), and (3) which levers are most feasible for rapid and equitable improvement (Burger & Christian, 2020; World Health Organization, 2010; Levesque et al., 2013).

2.6 Empirical Evidence on Access and Medicine Availability in South Africa

Empirical studies consistently reveal that access to essential medicines in South Africa is characterised by significant geographic and systemic disparities. Despite the existence of a national Essential Medicines List (EML) and Standard Treatment Guidelines (STGs), medicine availability remains inconsistent across provinces and facility types, particularly in rural and under-resourced areas (Perumal-Pillay & Suleman, 2017; Gray & Suleman, 2021).

A national analysis by Nemutandani et al. (2020) reported over 600 stockouts of essential medicines across 231 public health facilities between 2013 and 2015. Antiretroviral drugs accounted for most shortages, followed by anti-infectives and tuberculosis medications. Interestingly, urban facilities reported more stockouts than rural ones, a pattern that may reflect differences in reporting practices and inventory management systems. The study also found that pharmacy personnel were more likely than nurses to report stockouts, indicating variability in detection and documentation across professional roles (Nemutandani et al., 2020). These findings align with broader evidence highlighting systemic supply chain weaknesses and provincial disparities in medicine availability (Médecins Sans Frontières, 2019; Stop Stock Outs Project, 2022; Health Systems Trust, 2023).

Further evidence from the District Health Barometer and the Stop Stock Outs Project confirms that medicine availability varies widely across provinces. Gauteng and the Western Cape consistently report higher levels of medicine availability and facility readiness, whereas provinces such as Limpopo, Eastern Cape, and Northwest experience frequent shortages and logistical delays (Health Systems Trust, 2023; Stop Stock Outs Project, 2022). These disparities are closely associated with differences in infrastructure, supply chain efficiency, and human resource capacity, as documented in national audits and policy reviews (Gray & Suleman, 2021; Médecins Sans Frontières, 2019).

Maternal health services exemplify systemic gaps in medicine availability. National Department of Health data indicate that essential maternal medicines such as oxytocin, magnesium sulphate, and misoprostol, are not consistently stocked across

primary healthcare facilities, refer to Table 1 & Table 2. This shortfall is particularly concerning given South Africa's commitment to reducing maternal mortality under Sustainable Development Goal 3. Audit findings reveal that only about half of facilities meet minimum standards for medicine availability, with rural clinics disproportionately affected (Nemutandani et al., 2020; National Department of Health, 2024).

Table 1: Key Indicators of Access to Healthcare in South Africa by Province (2018 - 2019 and 2022-2023)

Source: District Health Barometer (2023); Médecins Sans Frontières (2019)

Province	Maternal Healthcare Coverage (%)	Clinic Ideal Status (%)	Medicine Stockouts
Gauteng	91.2	91.0	Low
Western Cape	88.7	85.3	Low
KwaZulu-Natal	84.4	61.2	Medium
Northern Cape	80.5	59.8	Medium
Free State	77.3	56.7	Medium
Mpumalanga	76.5	52.1	Medium
Eastern Cape	74.8	47.6	High
Northwest	71.4	41.3	High
Limpopo	69.6	28.9	High
National Average	79.5	54.7	Moderate

Note. Maternal healthcare coverage and clinic ideal status data are from the District Health Barometer (2023), reflecting the 2022/2023 financial year. Medicine stockouts data are from Médecins Sans Frontières (2019), based on findings from 2018–2019.

Appendix 2

Legend:

High - Frequent and prolonged stockouts or poor performance indicators (<50% coverage or availability).

Medium - Intermittent stockouts or moderate performance (approximately 50–75%).

Low - Rare or short-term stockouts or strong performance (above 75%).

Moderate - National average or mid-range status; a general midpoint between high and low categories.

Table 2: Maternal-Essential Medicines from the South African public primary health care (PHC) EML
Source: National Department of Health (2020); Médecins Sans Frontières (2019); District Health Barometer (2023)

Medicine Name	Use in Maternal Care	Formulation (PHC EML)	Stockout Risk (MSF/DHB Reports)
Oxytocin	Postpartum haemorrhage prevention and treatment	Injection	Moderate to High in rural provinces
Misoprostol	Alternative for postpartum bleeding and induction	Tablet	High, especially where cold storage for oxytocin is lacking
Iron and folic acid	Prevention and treatment of maternal anaemia	Combined oral tablet	Moderate
Magnesium sulphate	Management of eclampsia/pre-eclampsia	Injection	Low to Moderate
Ampicillin	Maternal infections including sepsis	Injection	Moderate
Gentamicin	Severe maternal/neonatal infections (2nd line)	Injection	Moderate
Metronidazole	Vaginal infections in pregnancy	Tablet	Low
Tetanus toxoid	Prevention of maternal and neonatal tetanus	Injection (vaccine)	Low

The Central Chronic Medicine Dispensing and Distribution (CCMDD) programme was introduced to enhance access for patients with stable chronic conditions by decentralising medicine collection points and reducing congestion at healthcare facilities. Evidence indicates that the programme has improved convenience and adherence for many patients; however, its implementation has faced notable challenges. These include delays in medicine delivery, communication breakdowns between facilities and distribution points, and infrastructural limitations that hinder seamless integration with facility-level stock management systems (Bogart et al., 2022).

Provincial disparities in healthcare efficiency exacerbate access to medicines. Ngobeni et al. (2020) conducted a Data Envelopment Analysis of all nine provinces using 2017/18 input-output data and found that only Gauteng and the Western Cape consistently operated at or near optimal technical efficiency. Other provinces exhibited marked inefficiencies, with potential input wastage of up to 64% in certain models. These gaps significantly affect the provinces' capacities for effective medicine procurement, distribution, and availability.

Collectively, these findings underscore the need for targeted interventions that address both systemic and contextual barriers to medicine access. Strengthening supply chain governance, investing in digital inventory systems, and ensuring equitable resource allocation across provinces are critical to improving medicine availability and advancing health equity in South Africa.

2.7 Additional Perspectives from Recent Literature

While previous sections have explored foundational frameworks and international case studies, emerging literature offers further insights into system and policy dynamics affecting medicine access in South Africa and comparable LMICs.

2.7.1 Health Technology Assessment and Priority Setting

Leong et al. (2024) highlight the growing role of Health Technology Assessment (HTA) in South Africa's pharmaceutical decision-making processes. Their research shows that tools such as cost-effectiveness analysis are increasingly used to guide inclusion decisions within the National Essential Medicines List (NEML), particularly for high-

cost therapies. Institutionalising HTA could strengthen transparency and ensure that resource allocation aligns with evidence-based prioritisation, thereby supporting both the affordability and appropriateness dimensions of the Levesque framework. In LMIC procurement markets, conflicting viewpoints also emerge around the role of e procurement and health technology assessment (HTA). Reformers argue that transparent tendering, digital tools, and HTA can improve value for money and reduce passive waste; still, the magnitude of attainable savings is uncertain and contingent on overcoming political economy constraints (Chalkidou et al., 2020). Evidence from nine middle income countries shows that even where accreditation and reimbursement reforms exist, delayed payments, benefit package non delivery, and high OOP persist suggesting design alone is insufficient without governance and enforcement capacity (Sumankuuro et al., 2023).

2.7.2 Stockouts and Facility-Level Disparities

Nemutandani et al. (2020) examined stockout trends and reported an unexpected pattern: urban facilities recorded more frequent medicine shortages than rural ones, a finding that may reflect differences in reporting practices and inventory management systems. The study also found that pharmacy personnel were more likely than nurses to detect and log shortages, indicating variability in documentation across professional roles. These findings underscore the need for harmonised reporting standards and improved monitoring systems across all facility types (Nemutandani et al., 2020; Médecins Sans Frontières, 2019; Stop Stock Outs Project, 2022; Health Systems Trust, 2023).

2.7.3 Human Resource and Infrastructure Constraints

Zuma (2022) identified a critical shortage of qualified pharmaceutical personnel, particularly post-basic pharmacist assistants, as a persistent barrier to medicine access in primary healthcare clinics. The study also noted that reliance on manual stock management systems in rural areas contributes to inaccuracies in inventory and delays in medicine replenishment. These factors undermine both the availability and accommodation dimensions of access and underscore the need for investment in human resources and digitised supply chain infrastructure (Zuma, 2022).

2.7.4 Community-Level Access and CHW Limitations

The systematic review by Olaniran et al. (2022) confirms that community health workers (CHWs) in low- and middle-income countries regularly experience stockouts of essential medicines, approximately 29% of the time, significantly higher than their affiliated health centres (9%). The study also reports that this issue has worsened over time, rising from around 26% between 2006-2015 to nearly 49% between 2016–2021. These stockouts are linked to distribution challenges rooted in weak integration with primary healthcare facilities and fragmented supply chains. Such findings are directly relevant to South Africa's rural health system, where CHWs are frequently relied upon to deliver basic care in settings with limited medicine availability.

2.7.5 Local Production and Regulatory Oversight

A recent policy brief on sustainable investment in Africa's pharmaceutical industry highlights critical misalignment between domestic production and essential medicines priorities, as well as regulatory delays in product registration (Assefa et al., 2024). These deficiencies undermine quality assurance and supply chain resilience, demonstrating the urgent need for enhanced coordination between industrial policy frameworks and regulatory oversight in South Africa's strategy for enabling access to essential medicines.

2.8 Summary

This chapter provided a comprehensive review of conceptual, empirical, and comparative literature on access to essential medicines in South Africa. It examined foundational frameworks such as Penchansky and Thomas's model and Andersen's Behavioural Model, before adopting the Levesque et al. (2013) framework as the primary analytical lens due to its multidimensional approach that integrates supply-side and demand-side factors. Two complementary models were also considered: the WHO Health Systems Building Blocks Framework, which offers a systemic perspective by categorising health system performance into six components, namely service delivery, health workforce, health information systems, access to essential medicines, financing, and governance, and the 3A Model (Availability, Accessibility, Affordability), which provides a simplified equity-oriented lens for prioritising interventions.

The literature highlighted persistent challenges despite progressive policy instruments such as the Essential Medicines List (EML) and Standard Treatment Guidelines (STGs), including procurement inefficiencies, recurrent stockouts, geographic disparities, and user-level barriers such as health literacy and affordability constraints. Comparative case studies from countries like Brazil, Rwanda, and Ghana demonstrated the effectiveness of decentralised procurement, public–private partnerships, and community-based delivery models. Emerging evidence also underscored the role of Health Technology Assessment (HTA), digital supply chain systems, and regulatory oversight in improving medicine availability. Collectively, the review affirmed that addressing access gaps requires integrated strategies that combine systemic reforms with user-centred approaches.

The next chapter outlines the research methodology adopted to investigate barriers to access to essential medicines in South Africa. The study employed a qualitative, desk-based design, drawing exclusively on secondary data from peer-reviewed articles, policy documents, and institutional reports. The Levesque framework served as the guiding analytical lens, complemented by insights from the WHO Health Systems Building Blocks Framework and the 3A Model to ensure a holistic assessment of both structural and experiential dimensions of access. The chapter details the inclusion and exclusion criteria for literature selection, the thematic analysis approach used to identify patterns, and the process of mapping themes to the Levesque dimensions. Ethical considerations are addressed, noting that the use of publicly available data did not require formal clearance. Limitations related to data scope, language restrictions, and provincial reporting inconsistencies are acknowledged, alongside strategies for mitigating these challenges through triangulation and critical appraisal. This methodological approach ensures rigor, transparency, and alignment with the study's objectives.

Chapter 3: Methodology

3.1 Research Design

This study adopted a qualitative, desk-based literature review approach to explore barriers to access to essential medicines in South Africa's public healthcare system. Rather than collecting primary data, the research synthesised evidence from peer-

reviewed articles, policy documents, and institutional reports. The Levesque et al. (2013) conceptual framework was employed as the primary analytical lens, enabling a multidimensional assessment of access by integrating supply-side determinants (service availability, affordability) and demand-side capabilities (ability to reach, pay, and engage with care).

3.1.1 Philosophical Paradigm

The study adopts a pragmatic paradigm, which emphasises practical problem-solving and the generation of actionable insights. Pragmatism is appropriate for research aimed at informing policy and improving health system performance, as it values methodological flexibility and the integration of diverse evidence sources. This orientation underpins the choice of a qualitative, literature-based design and the application of conceptual frameworks such as Levesque's model to guide policy-relevant analysis.

3.1.2 Analytical Framework and Operationalisation

While Levesque's framework served as the primary analytical lens (Levesque, Harris, & Russell, 2013), the analysis integrated the WHO Health Systems Building Blocks (World Health Organization, 2010) and the 3A model (Burger & Christian, 2020) to enhance system diagnosis and policy translation. This integration ensured that both structural determinants and equity priorities were systematically addressed. Operationalisation proceeded through five stages:

3.1.2.1 Codebook development

Initial open codes (stockouts, transport costs, health literacy, digital inventory) were generated inductively from the reviewed literature and policy documents.

3.1.2.2 Thematic mapping to Levesque:

Codes were grouped into sub-themes and mapped to Levesque dimensions (stockouts → availability/accommodation; travel burden → affordability/ability to pay), enabling a multidimensional interpretation of access barriers.

3.1.2.3 System attribution through WHO Building Blocks:

Each theme was attributed to a primary (and when relevant, secondary) Building Block (stockouts ↔ access to essential medicines & information systems; travel burden ↔ service delivery & financing; staffing gaps ↔ health workforce), providing a structured view of systemic weaknesses.

3.1.2.4 Equity prioritisation via 3A:

Themes were triaged through the Availability-Accessibility-Affordability lens to clarify near-term levers and distributional implications, ensuring that recommendations addressed both feasibility and equity.

3.1.2.5 Triangulation:

Themes and attributions were validated across multiple evidence sources, including national datasets (District Health Barometer), NGO reports (Stop Stock Outs Project), and peer-reviewed studies, to enhance credibility and reduce bias. This multi-framework approach strengthened the analytical depth of the study by linking user-experienced barriers to systemic determinants and equity-focused priorities. For example, stockouts initially coded as procurement failures were refined to "information-system/last-mile visibility" following cross-checks with District Health Barometer data and Stop Stock Outs Project reports. The coding process continued iteratively until thematic saturation was reached, defined as the point at which no new codes emerged during the review of the final set of sources.

3.2 Inclusion and Exclusion Criteria

Publications were included if they were in English, published between 2005 and 2025, and focused on South Africa or other low- and middle-income countries (LMICs) in relation to essential medicines or health system access. Eligible studies were required to demonstrate methodological transparency and policy relevance. Documents were excluded if they lacked methodological rigour, addressed exclusively high-income country contexts, or did not directly pertain to issues of access, medicines, or supply chain management.

The review encompassed literature published between 2005 and 2025, ensuring coverage of both historical and contemporary perspectives relevant to South Africa and comparable LMIC contexts. Thematic saturation was considered achieved when no new codes emerged after reviewing the final ten sources, indicating stability in the conceptual categories. To mitigate potential bias, sources were triangulated across peer-reviewed academic articles, national policy documents, and reports from international health organisations and NGOs, and validated against national datasets such as the District Health Barometer, refer to Table 3. This multi-source approach

enhanced representativeness and reduced the risk of single-source bias, thereby strengthening the credibility and robustness of the findings.

Table 3: Data Sources Used in Thematic Analysis

Type of Source	References
Peer-reviewed academic articles	Perumal-Pillay & Suleman (2017); Gordon et al. (2020); Leong et al. (2024)
National policies/strategies	Essential Medicines List, National Drug Policy, NHI White Paper (NDoH, 2022)
Reports by international health organisations	WHO publications on UHC and access equity
Grey literature from NGOs	MSF (2019), Stop Stock Outs Project (2022)
National performance datasets	District Health Barometer (2023), SANHANES-1
Comparative regional case studies	Brazil, Rwanda, Ghana, Tanzania, Pakistan (decentralised procurement)

3.3 Ethical Considerations

As the study relied exclusively on publicly available secondary data, ethical clearance was not required. All sources were properly cited, and care was taken to accurately represent findings from studies involving vulnerable populations.

3.4 Limitations

The reliance on secondary data may have excluded recent or unpublished developments. Restricting the review to English-language publications could limit regional perspectives. Additionally, inconsistencies in provincial data quality posed challenges for cross-comparison. These limitations were mitigated through triangulation and critical appraisal of sources.

3.5 Summary

This chapter presented the qualitative, literature-based methodology adopted to investigate access to essential medicines in South Africa. It outlined the research design, inclusion and exclusion criteria, and the inductive thematic analysis approach guided by the Levesque et al. (2013) framework. The use of secondary sources and

systematic coding enabled a structured exploration of both system-level and user-level barriers to access. Ethical considerations and study limitations were also discussed, emphasizing the scope, validity, and transparency of the research process.

The subsequent chapter synthesises and interprets the study's findings through the lens of the Levesque framework. It examines the interplay between system-level factors and user-side barriers to essential medicine access in South Africa, integrates comparative insights from international case studies, and draws key policy and practice implications.

Chapter 4: Discussion and Synthesis

4.1 Interpretation of Key Findings

Applying the integrated framework shows that access to essential medicines is shaped by intersecting system constraints: logistics, workforce, governance, and user capabilities which include to reach, pay, and engage. Thematic analysis and national datasets (DHB) converge on persistent stockouts, affordability burdens, and uneven programme implementation as principal barriers.

4.1.1 Thematic Alignment with Levesque Dimensions

Barriers identified through inductive coding were mapped onto the dimensions of the Levesque framework, as shown in Table 4:

Table 4: Thematic Barriers Mapped to Levesque Framework

Levesque Dimension	User Ability	Thematic Barrier
Availability & Accommodation	Ability to Reach	Stockouts; poor facility readiness in rural areas
Affordability	Ability to Pay	Out-of-pocket transport/time costs for low-income users
Appropriateness	Ability to Engage	Mismatched service delivery (for instance CCMDD) and user mistrust

Acceptability	Ability to Seek	Cultural and language mismatches
Approachability	Ability to Perceive	Low health literacy and awareness of entitlements

4.1.2 System Attribution Using WHO Health Systems Building Blocks

4.1.2.1 Access to essential medicines & information systems:

Recurrent stockouts, limited digital inventory, and weak last-mile visibility point to deficiencies in these blocks.

4.1.2.2 Health workforce

Shortages of pharmacy personnel and uneven skills in supply management impede availability and accommodation.

4.1.2.3 Service delivery

Inconsistent facility readiness, rural facility constraints, and fragmented CCMDD implementation affect continuity and convenience.

4.1.2.4 Financing & governance

Provincial efficiency differentials and procurement inconsistencies highlight governance and financing levers that shape availability and equity.

4.1.3 Equity Prioritisation via the 3A Model

Availability: Stockouts of maternal critical medicines (oxytocin, misoprostol) and chronic therapies remain uneven across provinces.

Accessibility: Travel distance and clinic density burden rural users, reducing practical reach even when items are nominally available.

Affordability: Indirect costs (transport, time) and inconsistent community dispensing erode users' ability to maintain therapy.

4.1.4 Cross-walk of Findings to Frameworks, shown in Table 5:

Table 5: Findings matched to Frameworks

Key finding	Levesque dimension(s)	WHO Building Block(s)	3A focus
Recurrent stockouts and variable facility readiness	Availability & accommodation; ability to reach	Access to essential medicines; information systems; service delivery	Availability
Delayed/fragmented CCMDD deliveries	Appropriateness; ability to engage	Service delivery; information systems; governance	Accessibility
Travel/time burden for rural users	Affordability; ability to pay	Service delivery; financing	Accessibility & Affordability
Pharmacy personnel shortages	Availability & accommodation; ability to reach	Health workforce; governance	Availability
Provincial efficiency disparities	Appropriateness; ability to engage	Governance; financing; service delivery	Availability & Affordability

Sources: national and provincial analyses, programme evaluations, and DHB indicators.

This dual approach anchored each identified access constraint in both empirical evidence and theoretical rationale. Affordability emerged as a recurring barrier in the literature, and indicators from the District Health Barometer (DHB) on transport costs and facility accessibility underscored the multidimensional challenges users encounter when seeking medicines.

Stockouts were consistently highlighted through thematic analysis of the literature and reports, where supply disruptions and medicine unavailability were frequently cited. These findings were corroborated by DHB data, which revealed persistent shortages of essential medicines such as misoprostol and oxytocin, particularly in provinces like Limpopo, Eastern Cape, and Northwest (Health Systems Trust, 2023). This convergence between inductively derived themes and national data reinforces the conclusion that stockouts represent a systemic and regionally uneven barrier to medicine access (Nemutandani et al., 2020; National Department of Health, 2024).

On the user side, limited health literacy, indirect costs, and mistrust in the health system constrain patients' ability to perceive, reach, and engage with care. Although programmes such as the Central Chronic Medicine Dispensing and Distribution (CCMDD) initiative aim to decentralise access, their effectiveness is compromised by inconsistent enrolment, delivery delays, and inadequate digital infrastructure (Bogart et al., 2022).

Collectively, these findings affirm that access to essential medicines extends beyond physical availability. It is co-produced by system responsiveness and user capability, both of which must be strategically strengthened to achieve equitable access (Levesque et al., 2013; Cu et al., 2021).

4.2 Comparative Reflections from International Case Studies

The expanded literature underscores that several LMICs have implemented adaptable models to address medicine access challenges. Brazil's *Farmácia Popular* programme leverages public–private partnerships to expand subsidised medicine access through accredited pharmacies, yielding improved chronic disease adherence (Emmerick et al., 2015). Rwanda's community health worker model, integrated with national logistics and financing systems, has enhanced rural access and trust in the health system (Binagwaho et al., 2014).

Ghana and Tanzania have piloted decentralised procurement systems, giving primary care facilities greater autonomy over ordering from pre-qualified suppliers. This approach improved responsiveness but required robust training and accountability frameworks to ensure procurement integrity (Nepomnyashchiy & Yadav, 2022). In contrast, experiences in Pakistan and Mongolia illustrate the risks of weak regulatory

oversight, where unregistered medicines compromised quality and equitable access (Rafi et al., 2021; Khurelbat et al., 2020). These case studies collectively highlight that success is most likely where procurement reform is accompanied by strengthened regulation, active community participation, and reliable logistics.

4.3 Policy and Practice Implications

The synthesis of literature and findings points to several key policy implications:

4.3.1 Digitalise the supply chain (Medicines & Information Systems): Real-time inventory with predictive replenishment to reduce stockouts (Availability)

4.3.2 Strengthen workforce for pharmaceutical services (Health Workforce): Train and deploy post-basic pharmacist assistants; standardise stock management competencies (Availability).

4.3.3 Optimise service delivery & last-mile logistics (Service Delivery): Stabilise CCMDD integration with facility stock systems and expand reliable community pick-up points (Accessibility).

4.3.4 Institutionalise HTA and improve procurement governance (Governance & Financing): Evidence-based selection and transparent contracting to ensure cost-effective access (Affordability).

4.3.5 Address user-side barriers (3A's Accessibility/Affordability): Transport subsidies, culturally responsive communication, and CHW-supported adherence to strengthen engagement (Accessibility/Affordability).

Integrating Levesque with WHO Building Blocks and the 3A model provides a more complete account of how structural determinants create user experienced barriers and how to prioritise feasible, equitable remedies. The analysis points to coordinated investments in digital logistics, pharmaceutical human resources, procurement governance/HTA, and community centred approach to deliver measurable gains in availability, accessibility, and affordability.

4.4 Summary

This chapter synthesised key findings through the lens of the Levesque framework, highlighting the multidimensional barriers to essential medicine access in South Africa. It explored how systemic weaknesses and user-side constraints intersect, with stockouts, affordability challenges, and uneven programme implementation affecting equitable access. Drawing from international case studies, it presented evidence of

successful decentralised procurement models, CHW-led outreach, and public-private collaborations. The chapter concluded with policy recommendations aimed at strengthening governance, improving regulatory oversight, and enhancing user engagement. These insights offer a roadmap for evidence-informed reform to close South Africa's access gaps.

The next chapter will consolidate the key insights derived from the analysis, address the central research questions, and present targeted policy recommendations aimed at improving access to essential medicines in South Africa. It will also articulate the study's contributions to the existing body of knowledge and propose directions for future research that can inform more equitable and sustainable health system reforms.

Chapter 5: Conclusion and Recommendations

5.1 Revisiting the Research Objectives

This study set out to explore the nature and extent of access to essential medicines in South Africa's public health system through a literature-based analysis guided by the Levesque et al. (2013) conceptual framework. To strengthen the analysis, complementary perspectives from the WHO Health Systems Building Blocks Framework and the 3A Model were also considered, providing systemic and equity-oriented lenses for understanding access. Mapping objectives to findings:

Objective 1

To assess the effectiveness of national policies and frameworks for essential medicine distribution, was met through a synthesis of policy instruments such as the Essential Medicines List (EML), Standard Treatment Guidelines (STGs), and the National Drug Policy, alongside evidence from implementation reviews and comparative case studies.

Objective 2

To identify major barriers to equitable access in the public health sector, was addressed through thematic analysis guided by the Levesque framework, which revealed systemic constraints (stockouts, procurement inefficiencies) and user-side barriers (health literacy, affordability).

Objective 3

To explore existing and proposed strategies to improve access, was fulfilled by examining decentralised delivery models, Health Technology Assessment (HTA) integration, and digital supply chain innovations documented in both national and international literature.

Objective 4

To evaluate the influence of supply chain governance, logistics, and financing on medicine availability, was met through evidence from provincial efficiency analyses and programme evaluations such as CCMDD, highlighting governance and resource allocation gaps.

5.2 Consolidated Findings

The literature revealed a series of interrelated challenges:

5.2.1 System-side constraints: These include recurring stockouts of essential medicines, inefficient procurement processes, disparities in provincial health system performance, and limited adoption of digital inventory management (Nemutandani et al., 2020; Ngobeni et al., 2020; Zuma, 2022).

5.2.2 User-side barriers: Patients often face limited health literacy, long travel times, unaffordable indirect costs, and inconsistent engagement from health providers; factors that inhibit their ability to seek, pay for, or engage meaningfully with care (Gordon et al., 2020; Burger & Christian, 2020).

5.2.3 Policy implementation gaps: Although national instruments such as the EML are in place, their effectiveness is undermined by uneven enforcement, inadequate monitoring, and weak feedback mechanisms from service users and local providers (Perumal-Pillay & Suleman, 2017; Gray & Suleman, 2021).

5.2.4 Inequities in access: Empirical data show stark geographic disparities, particularly in maternal medicine availability and chronic disease treatment in under-resourced provinces (Health Systems Trust, 2023; National Department of Health, 2024).

International case studies reinforced the value of decentralised procurement, robust regulation, and community-based outreach models in addressing both supply-side

inefficiencies and demand-side deficits (Emmerick et al., 2015; Binagwaho et al., 2014; Nepomnyashchiy & Yadav, 2022).

5.3 Policy Recommendations with Implementation Framework

To translate strategic directions into actionable reforms, this section provides timelines, indicative cost tiers, and implementation structures for each recommendation. Cost tiers are expressed qualitatively (Low, Moderate, High) based on infrastructure, human resource, and technology requirements. Timelines are categorised as Short-term (6-12 months), Medium-term (1-3 years), and Long-term (3-5 years).

5.3.1 Institutionalise Health Technology Assessment (HTA)

Action: Embed HTA mechanisms within the National Essential Medicines List Committee (NEMLC) to ensure evidence-based, cost-effective medicine selection.

Timeline:

Short-term: Develop HTA guidelines and capacity-building (6-12 months).

Medium-term: Full integration into NEMLC decision-making (1-2 years).

Cost Tier: Moderate (training, technical expertise, stakeholder engagement).

Implementation Structure:

Lead: National Department of Health (Pharmaceutical Policy Unit).

Support: Academic institutions, WHO technical assistance.

Monitoring Indicator: percentage (%) of new medicine inclusions supported by HTA reports.

5.3.2 Strengthen Digital Supply Chain Systems

Action: Deploy real-time inventory management and predictive analytics to reduce stockouts and improve transparency.

Timeline:

Short-term: Pilot digital inventory systems in two provinces (6-12 months).

Medium-term: Scale-up nationally with integration into CCMDD (2-3 years).

Cost Tier: High (IT infrastructure, software licensing, training).

Implementation Structure:

Lead: Provincial Health Departments (Supply Chain Units).

Support: National Department of Health, private tech partners.

Monitoring Indicator: percentage (%) of facilities reporting stock data digitally.

5.3.3 Expand Decentralised and Community-Based Medicine Delivery

Action: Scale up CCMDD and introduce community pick-up points integrated with facility stock systems.

Timeline:

Short-term: Expand CCMDD coverage by 20% in rural districts (6-12 months).

Medium-term: Full integration with digital systems and CHW networks (2-3 years).

Cost Tier: Moderate (logistics, training, community infrastructure).

Implementation Structure:

Lead: Provincial Health Departments.

Support: NGOs, private logistics providers.

Monitoring Indicator: percentage (%) of chronic patients enrolled in CCMDD.

5.3.4 Support Pharmaceutical Human Resource Development

Action: Train and deploy post-basic pharmacist assistants and supply chain managers to strengthen facility-level medicine management.

Timeline:

Short-term: Curriculum development and training cohorts (6-12 months).

Medium-term: Deployment across all provinces (1-3 years).

Cost Tier: Moderate (training, recruitment).

Implementation Structure:

Lead: National Department of Health (Human Resources for Health Directorate).

Support: Health Professions Council, training institutions.

Monitoring Indicator: Ratio of pharmacy personnel per Primary Health Care (PHC) facility.

5.3.5 Reduce User-Side Access Barriers

Action: Implement transport subsidies, health literacy campaigns, and culturally tailored communication strategies.

Timeline:

Short-term: Pilot transport voucher schemes and literacy campaigns (6-12 months).

Medium-term: Scale-up nationally with CHW integration (1-2 years).

Cost Tier: Low to Moderate (community outreach, subsidies).

Implementation Structure:

Lead: Provincial Health Departments.

Support: Local municipalities, civil society organisations.

Monitoring Indicator: percentage (%) reduction in missed appointments due to travel cost.

5.3.6 Enhance Regulatory Oversight for Quality Assurance

Action: Harmonise medicine registration and post-market surveillance systems for locally produced and imported medicines.

Timeline:

Short-term: Develop harmonised regulatory framework (6-12 months).

Medium-term: Implement electronic registration and monitoring systems (1-3 years).

Cost Tier: Moderate (regulatory system upgrades, training).

Implementation Structure:

Lead: South African Health Products Regulatory Authority (SAHPRA).

Support: National Department of Health, pharmaceutical industry.

Monitoring Indicator: percentage (%) of medicines registered under harmonised standards.

Table 6: Implementation Summary

Recommendation	Timeline	Cost Tier	Lead Agency	Key Indicator
HTA institutionalisation	6-24 months	Moderate	NDoH	(%) of decisions supported by HTA
Digital supply chain	6-36 months	High	Provincial Health Depts	(%) facilities using digital inventory
Decentralised delivery	6-36 months	Moderate	Provincial Health Depts	CCMDD enrolment coverage
HR development	6-36 months	Moderate	NDoH HRH Directorate	Pharmacy staff ratio

User-side barrier reduction	6-24 months	Low-Moderate	Provincial Health Depts	Missed appointment reduction
Regulatory oversight	6-36 months	Moderate	SAHPRA	(%) medicines under harmonised standards

5.4 Contribution of the Study

This study contributes to the growing body of work applying the Levesque framework to LMIC contexts, demonstrating its utility in diagnosing multi-dimensional barriers to medicine access. It synthesises evidence from national datasets, empirical studies, and international case studies to highlight both structural and experiential access constraints. The findings offer a coherent platform for policy innovation and systems reform, particularly as South Africa advances toward Universal Health Coverage (UHC) through the proposed National Health Insurance (NHI).

This study relied exclusively on secondary data, which may have excluded recent or unpublished developments. Restricting the review to English-language publications could limit regional perspectives, and inconsistencies in provincial reporting posed challenges for cross-comparison. While triangulation across multiple sources mitigated bias, the absence of primary data collection constrained the ability to capture lived experiences of medicine access. These limitations should be considered when interpreting the findings and underscore the need for complementary empirical research.

5.5 Directions for Future Research

Future research should adopt mixed-method approach that combine household surveys with facility audits and user narratives to capture nuanced experiences of access to essential medicines. Such designs would enable a deeper understanding of how structural and experiential factors intersect to shape healthcare outcomes. In addition, applying intersectionality frameworks can illuminate how gender, disability, income, and geography interact to compound access barriers, particularly in low- and middle-income contexts (Mothupi et al., 2023). Further operational research is needed

to examine the integration of Health Technology Assessment (HTA) into pharmaceutical decision-making, including the development of cost-effectiveness thresholds and stakeholder perspectives within the National Essential Medicines List Committee (NEMLC). Finally, longitudinal studies should monitor the implementation of decentralised procurement and digital logistics systems to evaluate their sustainability and impact on medicine availability over time (Cu et al., 2021).

5.6 Summary

This chapter consolidated the findings of the study and responded directly to the research objectives. It highlighted the persistent challenges in medicine access within South Africa's public sector, despite established policy frameworks. Drawing from national evidence and global practice, it offered a targeted set of policy recommendations and proposed directions for future inquiry. Ultimately, it affirmed that bridging access gaps requires a system that is not only well-resourced and efficiently governed but also attuned to the lived experiences and needs of its users.

Conclusion

This study set out to examine access to essential medicines in South Africa's public health system through a literature-based analysis guided by the Levesque et al. (2013) conceptual framework, complemented by the WHO Health Systems Building Blocks Framework and the 3A Model. The research aimed to assess the effectiveness of national policies and frameworks, identify systemic and user-side barriers, and explore strategies to strengthen access. The findings reveal that, despite progressive policy instruments such as the Essential Medicines List (EML), Standard Treatment Guidelines (STGs), and initiatives like the Central Chronic Medicine Dispensing and Distribution (CCMDD) programme, significant obstacles persist in translating policy intent into equitable access. These challenges include recurrent stockouts, procurement inefficiencies, geographic disparities, and user-level constraints such as health literacy and affordability.

The analysis underscores that improving access requires an integrated approach that addresses both supply-side and demand-side dimensions. Systemic reforms should focus on strengthening digital supply chain systems, decentralising procurement, and institutionalising Health Technology Assessment (HTA) to ensure evidence-based

prioritisation. At the same time, user-centred strategies such as health literacy interventions and cost mitigation measures are essential to enhance engagement and equity. Comparative insights from other low- and middle-income countries demonstrate that decentralised delivery models, robust regulatory oversight, and community-based outreach can significantly improve medicine availability when adapted to local contexts.

Access to essential medicines is not merely a logistical challenge but a multidimensional policy issue that intersects with broader questions of health system governance and social justice. Addressing these gaps will require sustained political commitment, coordinated action across sectors, and continuous monitoring to ensure that reforms translate into tangible improvements for all users. This research contributes to the evidence base for policy innovation and offers a foundation for future studies aimed at advancing universal and equitable access to essential medicines in South Africa.

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Appendix 1: Therapeutic Areas Covered by South Africa's Essential Medicines List (EML)

Therapeutic Area	Examples of Conditions/Uses	Level of Care
Cardiovascular	Hypertension, heart failure, dyslipidaemia	PHC, Hospital
Central Nervous System	Epilepsy, depression, psychosis	PHC, Hospital
Respiratory	Asthma, COPD, pneumonia	PHC, Hospital
Endocrine and Diabetes	Diabetes, thyroid disorders, adrenal insufficiency	PHC, Hospital
Gastrointestinal	Diarrhoea, GERD, constipation	PHC
Infectious Diseases	HIV, TB, malaria, STIs	PHC, Hospital, Tertiary
Antimicrobials	Antibiotics, antivirals, antifungals	All levels
Musculoskeletal and Joint	Gout, arthritis, back pain	PHC
Obstetrics and Gynaecology	Pregnancy, family planning, PPH, labour induction	PHC, Hospital
Paediatrics	Child-specific medicines and dosing	PHC, Hospital
Nutrition and Supplements	Anaemia, vitamin deficiencies, folate, zinc	PHC
Oncology and Haematology	Priority cancer meds, anaemia, anticoagulation	Hospital, Tertiary
Dermatology	Eczema, infections, acne, psoriasis	PHC

Ophthalmology	Conjunctivitis, glaucoma, eye trauma	PHC, Hospital
ENT (Ear, Nose, Throat)	Otitis media, sinusitis, tonsillitis	PHC
Emergency and Critical Care	Adrenaline, resuscitation meds, IV fluids	Hospital, Tertiary
Palliative and Pain Management	Analgesics, opioids, comfort care	PHC, Hospital
Immunisation and Immunoglobulins	Vaccines (e.g. measles, polio), immunoglobulin	PHC, Tertiary
Parasitic and Helminth Infections	Worm infestations, bilharzia	PHC
Wound and Skin Care	Antiseptics, dressings, antibiotic creams	PHC

Source: National Department of Health. (2020). *Standard Treatment Guidelines and Essential Medicines List for Primary Health Care Level (7th ed.).* Pretoria: NDoH.

Appendix 2: Key Indicators of Access to Healthcare in South Africa

This appendix provides definitions and context for three key health system indicators relevant to the study: Clinic Ideal Status, Maternal Healthcare Coverage, and Medicine Stockouts. The indicators are interpreted within the framework of access to essential medicines and healthcare equity in South Africa.

1. Clinic Ideal Status (%)

Definition:
Clinic Ideal Status (%) refers to the percentage of public primary healthcare (PHC) facilities that comply with national quality standards defined by the Ideal Clinic Realisation and Maintenance (ICRM) programme. These standards include criteria related to infrastructure, staffing, infection control, availability of medicines and supplies, and service efficiency (National Department of Health, 2023). Facilities must meet at least 70% of the minimum requirements to be considered 'ideal.'
Assessment Domains Include:

- Administrative systems and governance
- Infection prevention and control
- Availability of essential medicines and supplies
- Qualified and adequate staffing
- Clean and functional infrastructure
- Efficient service delivery processes
- Reliable health information systems

Relevance to This Study:
The Ideal Status is used as a proxy for the readiness and quality of healthcare facilities. Facilities with higher Ideal Status scores are generally better equipped to deliver uninterrupted access to essential medicines and maternal care services. This aligns with the 'availability' and 'appropriateness' dimensions of the Levesque et al. (2013) access framework.
Citation:
National Department of Health. (2023). *Ideal Clinic Realisation and Maintenance Framework*. Pretoria, South Africa.

2. Maternal Healthcare Coverage (%)

Definition:

Maternal Healthcare Coverage (%) refers to the proportion of pregnant women who attend their first antenatal care (ANC) visit before 20 weeks of gestation. This measure reflects early access to essential maternal healthcare and is used globally as a key indicator of maternal health service utilisation (World Health Organization, 2021).

Formula:

Maternal Healthcare Coverage (%) = (Number of women with first ANC visit < 20 weeks / Estimated number of pregnancies) × 100

Importance:

- Facilitates early detection of pregnancy-related complications
- Enables timely administration of maternal medicines (e.g., folic acid, iron, HIV prophylaxis)
- Promotes safe pregnancy planning and delivery
- Reflects on the availability and accessibility of maternal health services

Relevance to This Study:

This indicator serves as a proxy for maternal medicine access. It reflects how health system factors such as availability, approachability, and affordability influence the timing and uptake of care. It also aligns with the user-side capabilities in the Levesque framework, particularly the ability to perceive and seek care (Levesque et al., 2013).

Citations:

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3. Medicine Stockouts

Definition:

Medicine stockouts refer to the temporary unavailability of essential medicines at a health facility at the time they are needed. This typically includes medicines listed in the national Essential Medicines List (EML) or Standard Treatment Guidelines (STGs) (Médecins Sans Frontières, 2019). Stockouts prevent patients from receiving appropriate treatment and can reflect systemic failures in procurement, forecasting, distribution, or inventory control.

Implications:

- Interrupt continuity of care and reduce treatment adherence
- Force patients to pay out-of-pocket or seek private alternatives
- Undermine public trust in the healthcare system
- Indicates weaknesses in health system planning and supply chain management

Relevance to This Study:

Medicine stockouts directly limit access to care and essential treatment. In the Levesque framework, they represent failures in both the health system's ability to deliver (availability, appropriateness) and the population’s ability to engage. Stockouts are especially harmful in maternal care, where delays can lead to preventable morbidity and mortality.

Citations:

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