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Bridging Healthcare Gaps: A Quantitative Study of Home Health Care in eThekwini Metro

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ABSTRACT

Home health care, as a sub-acute medical service in eThekwini Metro, KwaZulu-Natal, has addressed critical healthcare gaps in South Africa by enhancing access, equity, and quality in resource-constrained settings. This model has responded to the growing burden of chronic diseases, aging populations, and a strained healthcare system. The study sought to evaluate the feasibility, societal acceptance, and sustainability of home health care, offering insights into its transformative potential. The research focused on eThekwini Metro, encompassing urban, peri-urban, and rural populations, reflecting diverse socio-economic and infrastructural challenges.

A quantitative, descriptive design was employed, with 388 respondents recruited through judgmental and snowball sampling. Data were collected via structured online questionnaires and were analysed using descriptive and inferential statistical techniques, including Chi-square tests, t-tests, and logistic regression.

Home health care demonstrated strong public acceptance, with 81.44% support. Economic modelling highlighted cost efficiencies through reduced hospitalisation, although barriers such as workforce shortages and limited digital infrastructure persisted. The study confirmed the potential of home health care to decentralise healthcare delivery and alleviate systemic challenges in eThekwini Metro. Scalability depended on investments in workforce development, digital health infrastructure, and public-private partnerships. Policymakers should prioritise comprehensive policies, community engagement, and innovative funding mechanisms like cost-sharing. Future research should assess long-term impacts and explore technological integrations to enhance equity and efficiency.

Keywords: eThekwini Metro, Healthcare Sustainability, Home Health Care, Patient-Centred Care, Public-Private Healthcare Integration, Sub-Acute Medical Services.

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Introduction

Addressing critical healthcare deficiencies in eThekwini Metro, KwaZulu-Natal, this study explores the implementation of sub-acute medical services through home health care (HHC), an innovative intervention with profound social and scientific significance. South Africa's dual healthcare system is marked by persistent inequities in access, affordability and service quality, disproportionately affecting marginalised populations (Benatar & Gill, 2020). These disparities are exacerbated by the rising burden of chronic illnesses, an aging population and the overstretched capacity of institutional facilities. Within this context, HHC emerges as a transformative model that decentralises healthcare delivery, alleviates institutional strain and enhances patient-centred outcomes. It is aligned with global calls for more equitable, sustainable healthcare systems, particularly in lower- and middle-income countries (World Health Organisation, 2018).

From a scientific perspective, the study addresses a substantive knowledge gap in the literature concerning the viability of HHC in resource-constrained settings. While much of the existing research has concentrated on high-income countries, with established digital health infrastructures and robust financing models, little empirical work has been conducted in middle-income contexts like South Africa (Sineke et al., 2019). The limited applicability of these international findings highlights the need for context-specific evidence. This study offers original insights by evaluating HHC's economic feasibility, public acceptability and structural sustainability within the heterogeneous socio-economic landscape of eThekwini Metro (Harris et al., 2017).

The theoretical foundation of this study is grounded in three interrelated frameworks: the SVMM, Porter's Diamond Model and the Vertical Integration Conceptual Framework. The SVMM enables an evaluation of systemic resilience and adaptability, offering a dynamic lens to assess the readiness of the healthcare system for decentralised interventions (Saviano et al., 2018). Porter's Diamond Model facilitates an understanding of how local conditions, such as workforce competencies, resource availability and demand patterns, shape the competitive sustainability of healthcare innovations (Zhang et al., 2019). The Vertical Integration

Conceptual Framework provides the structural basis for analysing how HHC interfaces with institutional systems, ensuring continuity and efficiency across care levels (Konetzka et al., 2018).

Research Aim

The aim of this study is to evaluate the feasibility and sustainability of implementing HHC as a sub-acute medical service within eThekwini Metro.

Research Objectives

The specific objectives are to assess

(1) the economic viability of home-based service delivery.

(2) the level of societal acceptance across diverse population segments.

(3) the systemic constraints and enablers affecting implementation. Ultimately, the findings will offer empirically grounded recommendations for policymakers, healthcare providers and researchers, contributing to the design of scalable, equitable health interventions suitable for South Africa and comparable socio-economic contexts.

Literature Review

HHC has garnered global attention as a viable solution to strained institutional healthcare systems, particularly in high-income nations where it has shown efficacy in reducing hospitalisation rates, improving patient satisfaction and cutting healthcare costs (Xiao et al., 2018; Perera et al., 2022). However, in middle-income settings such as South Africa, evidence remains sparse regarding the scalability, equity and systemic integration of such models. This literature review synthesises global and regional research across four interconnected domains: healthcare system constraints in South Africa, global trends in HHC delivery, economic considerations and frameworks for sustainable implementation.

a. Healthcare System Constraints in South Africa

South Africa's healthcare system is dualistic and fragmented, marked by stark disparities in access, resource allocation and health outcomes between the private and public sectors (Benatar and Gill, 2020). The public sector, which serves the majority of the population, suffers from chronic underfunding, workforce shortages and overburdened facilities. Reports indicate that the average number of hospital beds in the public sector (2.3 per 1,000 people) is well below the OECD benchmark of 4–5 (Statistics South Africa, 2022; Our World in Data, 2019). Moreover, access to post-acute care is limited, especially in rural and peri-urban communities, creating bottlenecks in recovery services and increasing the risk of readmission (McIntyre et al., 2021). These challenges provide a compelling rationale for alternative models of care that can decentralise service delivery and improve continuity of care at the community level (Mash et al., 2019).

b. Global Evidence on Home Health Care Models

Internationally, HHC models have demonstrated significant benefits in enhancing quality of life, reducing hospital readmissions and managing chronic illnesses (Benjenk and Chen, 2018; Chaves et al., 2021). For instance, hospital-at-home programs in the United States and Europe have shown reductions in healthcare costs and improvements in patient-reported outcomes (Jones et al., 2017; Gupta, 2019). These models are often supported by robust telehealth systems, multidisciplinary care teams and comprehensive reimbursement frameworks, conditions not yet prevalent in many low- and middle-income countries (Klein et al., 2017). In Africa, the adaptation of these models remains under-explored. A recent review by Sineke et al. (2019) revealed a paucity of empirical studies assessing the viability of HHC in socio-economically diverse African settings, indicating a significant gap in both policy and academic discourse.

c. Economic Viability and Financial Constraints

The economic feasibility of HHC hinges on factors such as affordability, insurance coverage and health system financing. Studies from high-income countries show that effective home-based care can lower costs by reducing avoidable hospitalisations

and facilitating timely interventions (Popescu et al., 2019; Gupta and Fonarow, 2018). However, cost-effectiveness in resource-constrained environments depends on adaptive financing models, such as sliding scale fees, capitation and public-private cost-sharing agreements (Formisano et al., 2018). In South Africa, only 16% of the population has private insurance, while the remaining majority relies on publicly funded services with constrained budgets (Econex_HASA, 2017). Emerging evidence suggests that integrating HHC into existing insurance mechanisms and aligning them with population-level budgeting can increase service uptake and sustainability (Christmals and Aidam, 2020). However, no studies have empirically tested this alignment in the context of South African metros, further reinforcing the relevance of this study.

d. Societal Acceptance and Cultural Context

Acceptance of HHC depends on trust in caregivers, perceived safety and cultural compatibility. Studies in high-income settings have shown that patients prefer care delivered in familiar home environments, particularly when trust is established with nursing professionals and family engagement is high (Owens et al., 2017; Ayele et al., 2019). In the South African context, cultural diversity and varying levels of health literacy influence perceptions of home-based care (Uibu, 2020). The role of community health workers (CHWs) and traditional health practitioners (THPs) is pivotal in bridging gaps between formal systems and community needs (Murphy et al., 2020; Maimela et al., 2018). Despite these insights, limited empirical work has explored the intersection of trust, cultural norms and HHC acceptability in peri-urban and rural communities within South Africa.

Conceptual and Theoretical Frameworks

The present study is anchored in three interrelated theoretical models that offer a structured lens for assessing feasibility and sustainability: SVMM, Porter's Diamond Model and the Vertical Integration Framework. SVMM enables analysis of system adaptability and stakeholder coordination in dynamic, resource-limited contexts (Saviano et al., 2018; Iandolo et al., 2018). Porter's Diamond Model assesses the interaction of demand conditions, workforce skills and supporting infrastructure, facilitating strategic planning in competitive healthcare environments (Vlados, 2019). The

Vertical Integration Framework supports the examination of care continuity across service levels and identifies inefficiencies in disconnected health systems (Konetzka et al., 2018; Machta et al., 2019). Few studies have simultaneously applied these frameworks in African healthcare contexts, making this study's methodological integration of them a novel contribution to the field.

Knowledge Gap and Research Justification

While international literature provides valuable lessons on the effectiveness and structure of HHC, the socio-political and infrastructural realities of South Africa demand a locally grounded investigation. To date, there remains a critical lack of quantitative studies evaluating the intersection of public perception, economic feasibility and systemic readiness for HHC within a South African metropolitan context. This study addresses this gap by offering empirical evidence from eThekwini Metro, where diverse population groups face variable access to care. Its contribution lies in contextualising global HHC strategies to local realities, thereby informing evidence-based policymaking and health system redesign.

Methods/Materials and Methods

a. Research Approach and Study Design

This study adopted a quantitative, descriptive, cross-sectional design to systematically assess the feasibility and sustainability of HHC services as a sub-acute medical intervention within eThekwini Metro, KwaZulu-Natal. This approach was selected to capture a wide range of perceptions and measurable outcomes related to economic viability, societal acceptance and systemic readiness. The design enabled the examination of both individual-level experiences and population-level trends using structured data collection tools and inferential statistics (Saunders, Lewis and Thornhill, 2019). This design was well suited to identify complex interrelationships among demographic, economic and infrastructural variables.

b. Study Setting

The research was conducted in eThekwini Metro, a metropolitan municipality in KwaZulu-Natal, South Africa. The region comprises a mix of urban, peri-urban and rural communities, each facing varying degrees of healthcare access. Urban areas

benefit from more developed infrastructure, while rural and peri-urban regions suffer from geographic isolation, workforce shortages and inadequate medical facilities. The region's reliance on public-sector healthcare at 8,207 public-sector beds compared to 4,181 in private institutions, highlights the system's structural limitations and underscores the relevance of decentralised models such as HHC (KZN-DOH, 2023; eThekwini Municipality, 2021).

c. Study Population and Sampling Strategy

The target population included patients, caregivers and healthcare professionals within the eThekwini Metro, stakeholders directly or indirectly involved in sub-acute care. Inclusion criteria required participants to be 18 years or older and to have had prior interaction with home-based or institutional healthcare services. No specific exclusion criteria were imposed beyond the inability to consent or access the digital survey platform.

A non-probabilistic sampling approach was employed, combining judgmental and snowball sampling techniques. Judgmental sampling allowed researchers to purposively select participants with relevant experience or knowledge in healthcare delivery, while snowball sampling extended recruitment via participant networks to include marginalised or difficult-to-reach groups. This approach yielded a final sample size of 388 respondents, a number deemed sufficient based on regional population estimates and feasibility constraints. However, due to its non-random nature, the sampling strategy introduced potential selection bias and may limit the generalisability of findings. Future research should consider probabilistic methods to enhance representativeness and external validity.

While the chosen non-probabilistic sampling approach, combining judgmental and snowball methods, facilitated access to diverse and otherwise hard-to-reach respondents, it introduces limitations in terms of generalisability and potential sample bias. Respondents recruited through existing networks may reflect more engaged or better-informed individuals, potentially skewing perceptions. In addition, reliance on online survey administration may have inadvertently excluded participants from digitally disconnected areas. To mitigate these concerns, the study actively engaged

community leaders to expand reach and used validated tools to enhance reliability. Nevertheless, findings should be interpreted cautiously, and future research should consider stratified probabilistic sampling designs.

d. Data Collection

Data were collected via a structured online questionnaire, comprising closed-ended and Likert-scale items designed to assess demographic characteristics, perceptions of HHC and views on its feasibility and sustainability. The instrument was subjected to pilot testing among a representative sub-sample to ensure validity, reliability and cultural relevance. The final version was deployed using secure online survey platforms, accessible via email and messaging applications.

To address the digital divide in under-resourced communities, community leaders were engaged to facilitate access and encourage participation among individuals with limited internet connectivity. Ethical compliance was maintained through secure data handling, informed consent procedures and anonymity safeguards in alignment with the Protection of Personal Information Act (POPI Act 4 of 2013).

e. Data Analysis

Data cleaning and validation were performed prior to analysis. The final dataset was analysed using advanced statistical software (SPSS v25), ensuring rigour and replicability.

The analysis employed both descriptive and inferential statistics:

Descriptive statistics (mean, median, standard deviation) summarised population characteristics and revealed general trends.

A one-sample t-test was used to compare public preference scores for HHC against a neutral midpoint.

Pearson correlation assessed relationships between key variables, such as trust in healthcare professionals and service acceptability.

Logistic regression identified significant predictors of HHC adoption, particularly affordability and educational attainment.

Chi-square tests of independence were conducted to evaluate associations between categorical variables (education level and acceptance of HHC).

This multi-layered analytic strategy allowed for nuanced insight into the systemic, demographic and socio-economic

dimensions influencing HHC viability in the study region.

f. Ethical Considerations

The research was approved by the Regent Business School Research Ethics Committee *(Reference: RBS/REC/2023/009)*. All participants were provided with information about the study's aims, data usage and voluntary nature. Written informed consent was obtained prior to participation. All responses were anonymised, and data were stored securely in compliance with the Declaration of Helsinki (Bierer, 2024) and the POPI Act.

Research Findings and Discussion

Research Findings

The findings underscore the multifaceted advantages of introducing a Sub-Acute Medical Service in the form of HHC within the eThekwini Metro. These benefits encompass a marked reduction in hospitalisation rates, significant cost savings within the healthcare system and enhanced levels of patient satisfaction. Nonetheless, the successful implementation of such a service necessitates the resolution of challenges, including infrastructural deficits, funding constraints and the requisite training of caregivers. The data further reveal a pronounced preference among respondents for the adoption of HHC services in eThekwini Metro, as evidenced by consistently high agreement levels across multiple evaluative measures. The descriptive statistical analysis provides a granular understanding of public attitudes, elucidating nuanced perspectives and potential adoption trajectories for these innovative healthcare services.

Acceptance and Feasibility Chi-Square Test Results

The provided diagram, titled "Correlation Diagram: Statistical Findings for Acceptance and Feasibility," represents various statistical indicators (e.g., chi-square values, scaled p-values and logistic regression coefficients) related to the acceptance and feasibility of HHC services.

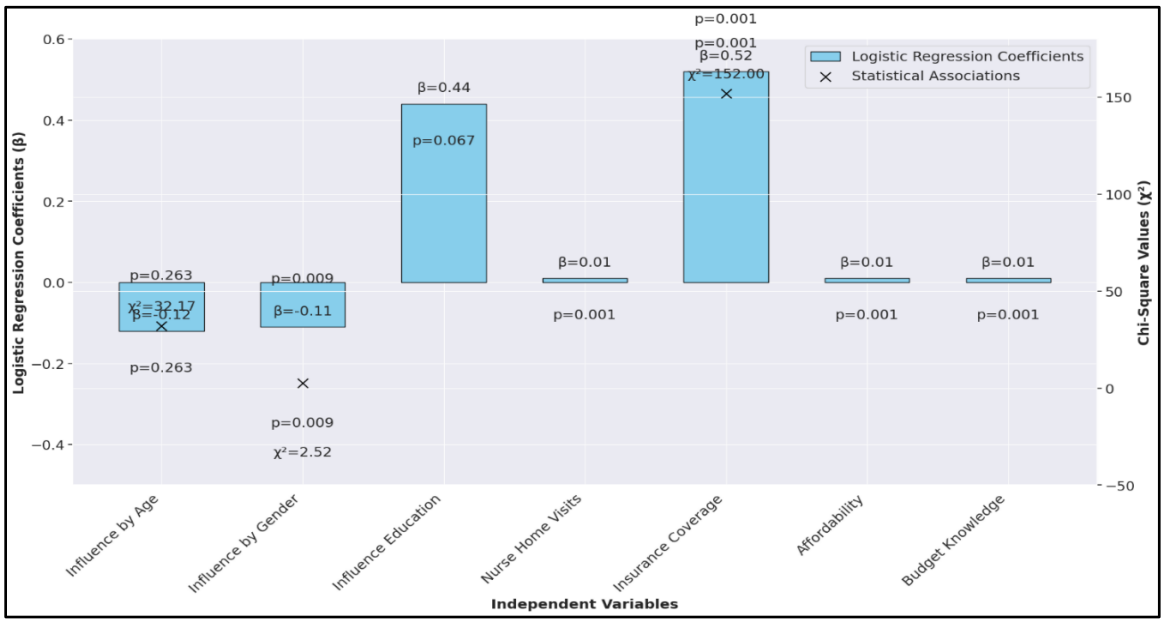

Figure 1: Statistical Correlations: Determinants of Acceptance and Feasibility in Home Health Care

The acceptance and feasibility of HHC are influenced by several demographic and structural factors, as evidenced by both statistical and marketplace analyses. Figure 2 illustrates that while age (χ^2=32.17, p=0.268) and gender (χ^2=8.52, p=0.385) did not demonstrate statistical significance, practical trends indicate a generational shift towards modern healthcare solutions, with younger respondents (38.2% aged 18–35) showing a natural affinity for innovative care models. The female-dominated sample (64.7%) highlights an opportunity to design services that address caregiving roles predominantly undertaken by women, as noted in the sociocultural insights of the uploaded marketplace analysis. Education (χ^2=25.17, p=0.067) emerged as a borderline significant factor, with higher education levels (65.2% holding post-secondary qualifications) significantly predicting acceptance. This aligns with the marketplace's emphasis on the critical role of educated populations in understanding and adopting decentralised healthcare solutions.

The logistic regression analysis further reinforces education (β=0.44) and affordability (β=0.52) as the strongest predictors of adoption, underscoring the importance of targeted outreach to educated demographics. Additionally, the findings draw from Porter's Diamond Model, were

human capital and affordability are identified as vital levers for achieving competitive healthcare delivery (Formisano, et al., 2018). These insights reflect a synthesis of empirical data and strategic frameworks, suggesting that tailoring services to demographic strengths and addressing affordability through cost-sharing mechanisms will enhance adoption feasibility in eThekwini Metro.

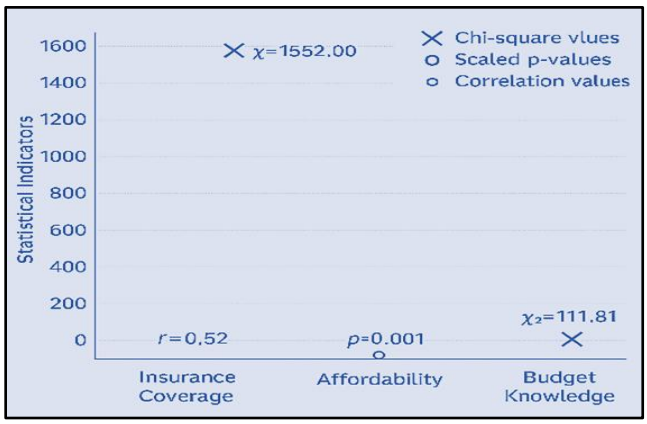

Figure 2: Economic Viability Metrics: Key Statistical Indicators for Home Health Care Implementation

Economic Viability

Evaluating the economic viability of HHC services is essential to their feasibility, focusing on factors like insurance coverage, affordability and public awareness of healthcare budgeting. Economic considerations determine whether these services can achieve financial sustainability while ensuring accessibility across socio-economic groups. This section examines key economic indicators to assess their role in the adoption and long-term viability of HHC in eThekwini Metro.

Figure 3 underscores the pivotal role of economic viability in implementing HHC in eThekwini Metro, particularly within the constraints of local healthcare infrastructure. Insurance coverage (χ^2=1552.0, p<0.001) and affordability (χ^2=111.81, p<0.001) emerged as critical determinants. With 66.2% of the population insured, leveraging cost-sharing models presents an opportunity to reduce the financial burden on uninsured and disadvantaged groups. However, infrastructural limitations, such as resource shortages and underfunded facilities, pose significant challenges to seamless integration. The strong positive correlation between affordability and insurance coverage (r=0.52, p<0.01) highlights the imperative of

embedding HHC into existing insurance frameworks to enhance accessibility and bridge infrastructural gaps.

Public support for cost-effective healthcare solutions, closely tied to budget awareness (χ^2=111.81, p<0.001), underscores the importance of targeted financial literacy campaigns. Findings from the marketplace analysis reveal structural inefficiencies, including uneven resource allocation and limited technological adoption, which exacerbate economic barriers. Addressing these inefficiencies requires aligning implementation strategies with the VSA to harmonise organisational, financial and technical dimensions for sustainable service delivery.

The Living Standards Measure (LSM) is a widely used socio-economic segmentation tool developed by the South African Audience Research Foundation (SAARF). It classifies households into deciles from LSM 1 (lowest living standard) to LSM 10 (highest), based on variables such as household income, access to basic services, ownership of consumer goods and education level. Unlike income alone, LSM captures multi-dimensional poverty and lifestyle differentiation, making it particularly valuable in assessing healthcare accessibility and affordability in unequal societies such as eThekwini Metro (Crowley, et al., 2021; Statistics South Africa, 2022). In this study, LSM 1–4 denotes low-income, financially vulnerable groups with limited healthcare access, while LSM 5–7 represents middle-income segments more likely to engage in structured care models.

Building on this segmentation, the evaluation identifies LSM 7 as a pivotal group capable of driving the adoption of HHC through enhanced engagement with financial literacy initiatives. These middle-income households are well-positioned to respond to decentralised care innovations if affordability and risk perception are addressed. Facilitating partnerships between insurers and public health systems, alongside the development of adaptive financial models, could mitigate existing barriers. Such alignment would significantly enhance the operational feasibility of HHC, ensuring the model is tailored to the socio-economic and infrastructural realities of eThekwini Metro.

Sustainability Dimensions

Sustainability forms a cornerstone for the success of HHC service implementation. Evaluating technical, political and social dimensions reveals system readiness and areas for improvement. Aligned with the study's aim to assess the economic viability of sub-acute services in eThekwini Metro, this section examines key components essential for the lasting impact of HHC. It highlights the system's capacity for coordinated care, political support and community perceptions of healthcare equity, all critical to achieving the study's goals.

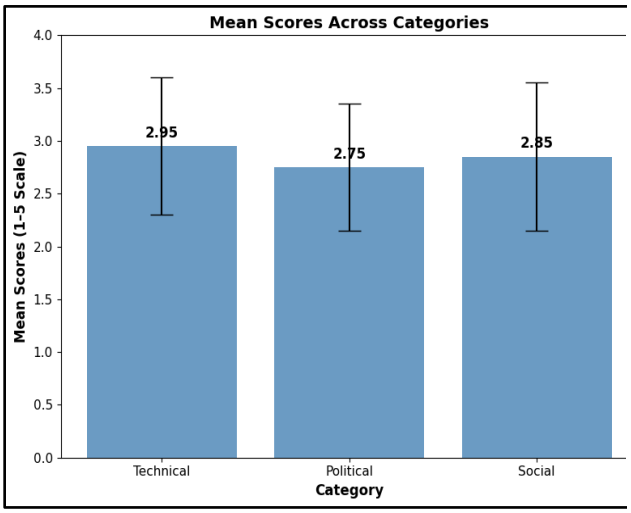

Figure 3: Sustainability Dimensions (technical, political and social)

Figure 4 examines sustainability across technical, political, social and financial dimensions, highlighting critical areas for intervention to ensure long-term viability. The technical dimension scored M=2.982; ±0.823, indicating moderate gaps in care coordination, infrastructure and technological readiness, necessitating investments in caregiver training and digital health solutions. The political dimension, with the lowest score (M =2.749; ±0.693), reflects dissatisfaction with governmental support and funding, emphasising the need for stronger advocacy to integrate HHC into national health priorities. Social sustainability (M =2.884; ±0.751) reveals inequities in access and engagement, requiring targeted outreach to marginalised communities to foster inclusivity.

Financial sustainability presents distinct challenges across socio-economic strata. Middle-income groups (LSM 7, r=0.89) demonstrate strong engagement with structured healthcare systems, driven by limited discretionary income and the need for high-quality care. Lower-income populations (LSM 1, r=1.00) heavily depend on public healthcare funding and subsidies, but limited budget awareness underscores the need for educational initiatives to optimise access to services. In contrast, higher-income groups (LSM 9, r=0.03) show minimal interest in cost management due to financial

independence, highlighting their reduced reliance on subsidised healthcare.

This stratification underscores the necessity for financial strategies tailored to socio-economic realities. Adaptive cost-sharing models for middle-income groups and expanded subsidies with educational campaigns for lower-income populations are essential to address these disparities. These findings align with the marketplace analysis, which emphasises socio-economic diversity as a critical determinant of healthcare decisions. Implementing targeted interventions to bridge these gaps will be instrumental in enhancing the financial sustainability of HHC services in eThekwini Metro.

Financial Dimensions of Sustainability

Understanding the financial dimensions of sustainability is crucial for assessing the feasibility of HHC services in eThekwini Metro. This section explores the relationship between LSM categories and financial sustainability indicators, such as knowledge of patient pathways, healthcare budgets, cost awareness, engagement in budgeting and disease burden. These insights align with the study's objective of evaluating economic viability, providing a nuanced understanding of how socio-economic factors influence public perceptions and behaviours in financial sustainability.

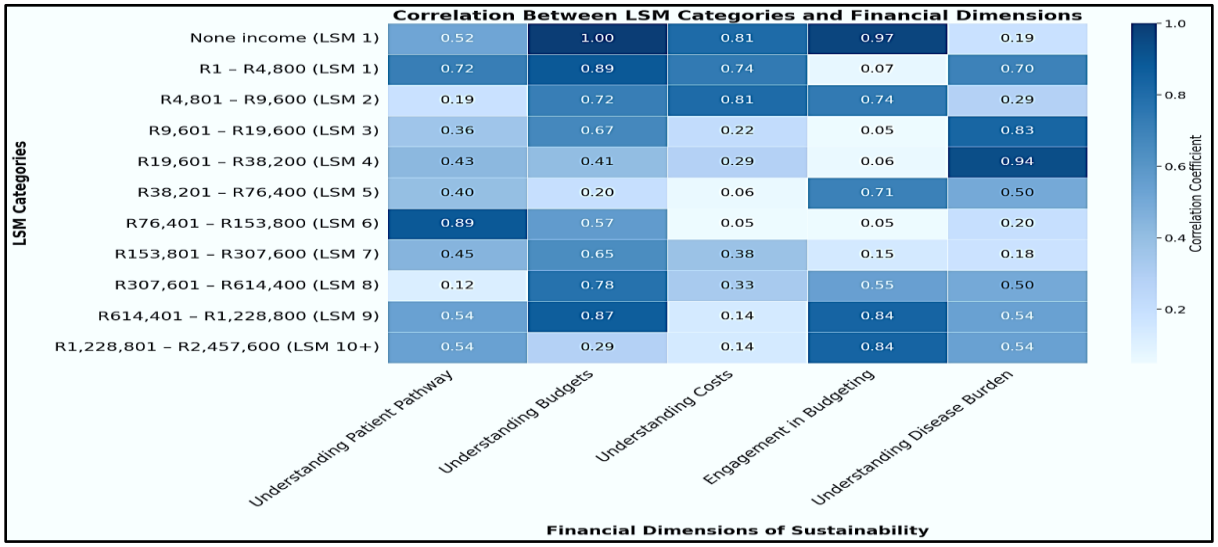

Figure 4: Correlation Heatmap: LSM Categories and Financial Dimensions of Sustainability

The heatmap in Figure 5 illustrates the complex relationships between socio-economic strata, represented by LSM categories and critical financial dimensions influencing the sustainability of HHC services. This analysis explores correlations among patient pathways, healthcare budgeting, cost awareness, budgeting engagement and disease burden. In navigating patient pathways, middle-income groups, particularly LSM 7 (R153 801 - R307 600, r=0.89), exhibit strong engagement, reflecting their reliance on both public and private healthcare options. Lower-income groups such as LSM 1 (r=0.52) also show meaningful engagement, driven by
In cost awareness, middle-income groups like LSM 3 (r=0.99) exhibit strong interest, reflecting challenges in balancing affordability and quality. Conversely, higher-income groups such as LSM 9 (r=0.03) show minimal interest due to financial stability, which diminishes the relevance of cost concerns.

Engagement in budgeting reveals distinct socio-economic trends. Lower-income groups, particularly LSM 1 (r=0.97), rely heavily on budgeting for access to subsidised services. Middle-income groups, including dependence on government facilities requiring clear pathway navigation. The data underscores the value of patient pathway education, particularly for middle-income groups like LSM 3 (r=0.36), to enhance their healthcare interactions. Budget awareness is highest among lower-income groups (LSM 1, r=1.00), reliant on subsidised public healthcare and upper-income groups (LSM 10, r=0.87), whose awareness may influence policy decisions. Middle-income groups, such as LSM 5 (r=0.64), display moderate awareness, indicating the need for targeted initiatives to improve budgetary understanding.

LSM 3 (r=0.30), show moderate engagement, while wealthier groups like LSM 9 (r=0.55) and LSM 10 (r=0.30) exhibit weaker involvement, requiring strategies to increase their participation.

Disease burden awareness is pronounced among middle-income groups, such as LSM 3 (r=0.85) and LSM 5 (r=0.94), reflecting exposure to non-communicable diseases and associated financial challenges. Higher-income groups, including LSM 9 (r=0.14), demonstrate weaker correlations, likely due to financial resilience in managing healthcare

costs. This analysis highlights the varying engagement levels and awareness across socio-economic strata, emphasising the necessity of stratified approaches in financial planning for sustainability. Tailored interventions addressing the unique needs of each LSM category will enhance inclusivity and ensure the economic viability of HHC services in eThekwini Metro.

Discussion

The findings of this study underscore critical insights into the challenges and opportunities inherent in adopting HHC systems within eThekwini Metro. Building on the results, this section explores the implications of public preferences, feasibility, economic viability and sustainability dimensions, integrating theoretical frameworks and empirical marketplace analysis to provide depth and context.

Infrastructural Constraints and Healthcare Sustainability in eThekwini Metro

The eThekwini Metro faces critical infrastructural challenges, including the lack of digital health systems such as telemedicine platforms and integrated electronic health records, essential for efficient care coordination. The projected decrease in hospital bed availability, from 3.16 per 1 000 population in 2020 to 2.94 by 2025, alongside population growth from 3 920 129 to 4 210 624, highlights a growing disparity between healthcare demand and resources. South Africa's average of 2.3 hospital beds per 1,000 population remains below global benchmarks of 2 - 4 beds per 1 000 in high-income countries (Our World in Data, 2019; Statistics South Africa, 2022). Private sector challenges further compound this issue, with private hospital bed shortages expected to rise from 210 in 2020 to 371 by 2025, despite the insured population increasing from 1 128 997 to 1 170 331. Day hospital beds, vital for non-acute and ambulatory care, remain stagnant at 105, failing to meet the rising demand, which is projected to grow from 177 beds in 2020 to 187 by 2025 (Statistics South Africa, 2022). These shortfalls underscore the need for innovative solutions to address the strain on traditional healthcare infrastructure. With privately insured households increasing from 309 314 in 2020 to 325 092 by 2025, the growing demand for private healthcare services highlights the limitations in scalability.

HHC presents a sustainable alternative, offering decentralised, community-focused care to mitigate pressures on hospital systems. It provides critical support for chronic disease management, post-acute recovery and mental health care, positioning itself as a transformative model to bridge the resource gap in eThekwini Metro's healthcare landscape.

Acceptance and Feasibility of Home Health Care in eThekwini Metro

Acceptance and feasibility of HHC services in eThekwini Metro are shaped by interdependent demographic, educational and structural factors, each presenting both opportunities and constraints.

Figure 1 demonstrates a higher acceptance rate among younger and more educated populations, aligning with Porter's Diamond Model, which highlights the influence of informed demographics on fostering healthcare innovation (Zhang, 2023). Younger cohorts, familiar with modern healthcare approaches and individuals with higher educational attainment show greater receptivity, underscoring the potential of leveraging educational campaigns to enhance adoption rates. The marketplace analysis reveals significant barriers, including gaps in community engagement and technical training, alongside systemic challenges such as workforce shortages and insufficient digital health infrastructure, including the lack of integrated electronic health records. These issues are supported by the Systems Viability Monitoring Model, which underscores the importance of integration strategies to overcome structural limitations (Saviano et al., 2018). Affordability and education emerged as primary predictors of acceptance (β=0.52 and β=0.44, respectively), reinforcing Porter's emphasis on cost-effectiveness and informed decision-making (Konetzka et al., 2018).

While age and gender were not statistically significant predictors, practical trends indicate younger, educated demographics as critical targets for service implementation. Middle-income groups, particularly responsive to affordability-focused healthcare initiatives, validate the need for tailored interventions, as highlighted in demographic analyses within LSM categories (Zhang, 2023; Maimela et al., 2018).

VSA complements these insights, advocating decentralised governance, stakeholder alignment and systemic integration.

Addressing gaps in technical training and community involvement can enhance operational readiness. Strategies such as strengthening local governance, integrating traditional health practices and leveraging community health workers (CHWs) can foster the systemic coordination required for successful HHC implementation in eThekwini Metro (Murphy et al., 2020).

Strategic Economic Frameworks for Home Health Care Viability in eThekwini Metro

Economic viability is critical for the sustainable implementation of HHC services, closely tied to the socio-economic dynamics of eThekwini Metro. Projections of private hospital bed shortages, increasing from 210 in 2020 to 371 in 2025, coupled with a growing insured population, underscore the pressing need for alternative care models to alleviate systemic strain (Econex_HASA, 2017). Cost-sharing mechanisms and sliding scale fees emerge as pivotal strategies to address financial disparities, particularly in middle-income groups, which demonstrate strong engagement in financial literacy initiatives (Maimela et al., 2018). These strategies, supported by Porter's Diamond Model, advocate aligning resource allocation and infrastructure development with local market demands and demographic trends (Zhang, 2023). With insurance coverage at 66.2%, there is substantial potential for leveraging cost-sharing models to reduce financial barriers for underserved populations. The significant correlation between budget literacy and public support for cost-effective healthcare solutions (χ^2=111.81, p<0.001) emphasises the need for financial education initiatives to enhance system sustainability.

Porter's Diamond Model situates these insights within a competitive framework, linking resource optimisation and infrastructural readiness to market dynamics, fostering a resilient and adaptive HHC system. Adaptive pricing mechanisms, such as sliding scales and targeted subsidies, further bridge the gap between affordability and accessibility (Formisano et al., 2018). These financial interventions are particularly relevant for middle-income groups, such as those within Living Standards Measure (LSM) 7, showcasing how tailored approaches can enhance economic feasibility. Integrating these findings within theoretical frameworks ensures that HHC in eThekwini Metro not only addresses socio-economic

disparities but also establishes a sustainable, equitable healthcare model capable of fostering long-term systemic resilience.

Strategic Dimensions of Sustainability in Home Health Care Implementation

The sustainability of HHC services in eThekwini Metro requires addressing technical, political, social and financial deficiencies as highlighted in the findings and theoretical frameworks. Technically, the moderate score (M =2.982 ±0.823) underscores critical gaps, including the absence of integrated electronic health records and telemedicine platforms, vital for effective care coordination. While the study identifies digital infrastructure as a technical constraint, this finding is based on participant perception and health system readiness data rather than direct economic modelling. Future implementation strategies should therefore incorporate cost-benefit analyses of digital health investments to validate their economic feasibility, particularly in lower-resourced sub-districts.

Exploring public-private financing models for telemedicine and health information systems may support more equitable infrastructure rollout. Workforce shortages, particularly in skilled nursing and digital expertise, exacerbate these constraints, as corroborated by the marketplace analysis (Saviano et al., 2018). Politically, low scores (M=2.749 ±0.693) reveal dissatisfaction with government support and inadequate funding allocations, necessitating advocacy to prioritise HHC in national health strategies, as emphasised by the Systems Viability Monitoring Model (Harris et al., 2017). Social sustainability (M=2.884 ±0.751) highlights persistent inequities in access for marginalised communities. Addressing these disparities demands culturally attuned interventions, such as community outreach and strengthened roles for community health workers, as advocated by Uibu (2020).

Financial sustainability reveals stark socio-economic divides: lower-income groups (LSM 1) depend heavily on public subsidies, while middle-income populations (LSM 7) show greater engagement with cost-sharing and financial literacy initiatives. Porter's Diamond Model contextualises these findings, emphasising the need for resource alignment with specific market demands and leveraging local advantages (Zhang, 2023). Integrated strategies are essential to ensure equity and resilience.

According to the VSA framework, technical readiness must focus on digital health infrastructure and workforce development to enable sustainable operations (Saviano et al., 2018). Meanwhile, stratified approaches, combining targeted outreach for vulnerable populations and fostering cost-sharing mechanisms for middle-income groups, are pivotal for financial and social sustainability. By aligning policy priorities with local socio-economic conditions, the eThekwini Metro can transition towards a sustainable HHC model, addressing systemic inequities while promoting operational and financial stability.

Integrated Financial Strategies for Sustainable Healthcare Systems

The financial sustainability of HHC services in eThekwini Metro is closely tied to socio-economic conditions, particularly the dependence of lower-income groups such as LSM 1 on subsidies and public funding due to systemic inequities. Barriers including bureaucratic inefficiencies, inadequate subsidy allocations and fragmented processes hinder timely healthcare access, deepening reliance on strained public systems (Christmals and Aidam, 2020). Middle-income groups, like LSM 7, actively participate in financial literacy initiatives and cost-sharing mechanisms, reflecting the VSA framework's focus on optimising resources to bridge socio-economic disparities. Marketplace analysis underscores how tailored financial education programmes can improve affordability and healthcare accessibility for these demographics (Saviano et al., 2018; Zhang, 2023). Higher-income groups, although largely independent of subsidies, primarily support private healthcare providers and show limited interest in cost management, a trend consistent with marketplace findings.

Porter's Diamond Model contextualises these dynamics, emphasising the importance of leveraging local demand conditions, particularly the healthcare needs of middle-income groups and aligning resources to meet market-specific requirements. The growing insured population, coupled with persistent hospital bed shortages, highlights the need for tailored healthcare services to address demand effectively and enhance systemic resilience in eThekwini Metro (Zhang, 2023).

Innovative strategies, such as public-private partnerships and targeted subsidies, have demonstrated success in addressing financial constraints and fostering collaboration between public entities and private stakeholders. In eThekwini Metro, such partnerships can alleviate resource shortages through co-investment in essential infrastructure, including digital health platforms and workforce training. The private sector's expertise can enhance affordability through adaptive pricing models and cost-sharing mechanisms, while targeted subsidies ensure equitable access for marginalised populations. These approaches, integrated with Porter's Diamond Model and the Systems Viability Monitoring Model, provide a comprehensive framework for achieving financial sustainability and equity in healthcare delivery (Saviano et al., 2018; Zhang, 2023).

Integration with Theoretical Frameworks

The study's findings underscore the necessity of integrating advanced theoretical frameworks, including the SVMM, Porter's Diamond Model and the VSA, to enhance the sustainability and adaptability of HHC in eThekwini Metro's socio-economic and infrastructural landscape. These frameworks provide a comprehensive approach to stakeholder collaboration, systemic integration and resource optimisation, crucial for addressing the pluralistic and fragmented healthcare system in South Africa (Saviano et al., 2018; Konetzka et al., 2018).

Katuu (2018) further substantiates this by emphasising the inclusion of socio-economic, cultural and institutional considerations in healthcare reform. The SVMM provides a critical framework for addressing misalignments in eThekwini Metro's healthcare sector. Its emphasis on adaptive governance and decentralised decision-making aligns with Katuu (2018) advocating for community-driven models that respond to local needs. This approach is pivotal for bridging disparities and fostering equity within a diverse healthcare landscape.

Porter's Diamond Model complements this by highlighting competitive drivers such as demand conditions and related industries. For instance, the increasing prevalence of chronic diseases and aging populations necessitates decentralised care models. Integrating traditional health practitioners (THPs), as highlighted by Maimela et al. (2018), fosters cultural trust and accessibility, addressing

historical inequities in marginalised communities. The VSA framework highlights the importance of systemic adaptability and patient-centred care, particularly in addressing infrastructural barriers such as the lack of digital health platforms. Katuu (2018) asserts the critical role of telemedicine and electronic health records in achieving care coordination, aligning with the study's emphasis on technological integration to optimise resource allocation. Roemer's framework, adapted by Katuu (2018), underscores the state's responsibility in addressing workforce shortages and funding gaps. Comprehensive policies, public-private partnerships and collaborative governance are essential strategies for enhancing resource allocation and scalability.

Cockerham-Stevens' framework, as discussed by Katuu (2018), further distinguishes the roles of public and private sectors in improving health outcomes. In eThekwini Metro, harmonising these sectors is critical for implementing HHC effectively, especially given institutional bed shortages and infrastructure strain. Vertical integration, as emphasised by Konetzka et al. (2018), ensures continuity of care and reduced hospitalisation rates by bridging institutional and home-based settings. In conclusion, these frameworks collectively address the socio-economic, cultural and infrastructural challenges unique to eThekwini Metro, offering a robust roadmap for sustainable HHC implementation. The findings provide actionable insights for policymakers, healthcare providers and researchers, contributing to the development of resilient, equitable healthcare systems tailored to the realities of middle-income nations like South Africa.

Implications and Recommendations

The implications of this study highlight the transformative capacity of HHC in addressing the complex healthcare challenges of eThekwini Metro, contingent on strategic interventions across political, technical and social domains. These findings provide a foundation for policy development, stakeholder engagement and future research aimed at fostering an equitable healthcare paradigm. To mitigate existing disparities and enhance inclusivity, focused efforts on engaging marginalised communities are essential. Building trust through culturally

sensitive outreach and collaboration with community leaders can amplify awareness and foster public acceptance of HHC. Public-private partnerships and robust government involvement are pivotal for addressing political and structural gaps, ensuring the seamless integration of HHC within South Africa's healthcare framework. Policymakers must develop comprehensive guidelines aligned with national health priorities to support implementation. In parallel, district-level health planners should leverage this data to incorporate HHC into primary care expansion strategies. Tailoring workforce development policies to support the recruitment and upskilling of community health workers and nurses for home-based service delivery is vital. Such policies should reflect the diverse Living Standards Measure (LSM) profiles of target populations to ensure cultural and socio-economic alignment.

Additionally, frameworks should be developed to formally integrate traditional health practitioners into service models where community trust supports their involvement. Workforce capacity-building remains a critical priority, necessitating investments in healthcare provider training. Emphasis on collaborative care models integrating community health workers (CHWs) and traditional health practitioners (THPs) can expand service reach and cultural alignment. Concurrently, infrastructural and technological improvements, particularly in telemedicine and digital health records, are indispensable for delivering efficient care to underserved areas. Future research should investigate the long-term economic and social impacts of HHC, focusing on innovative funding models to ensure sustainability. Integrating insurance mechanisms and cost-sensitive approaches, such as sliding scale fees, can alleviate financial barriers for low- and middle-income populations. Advocacy campaigns to enhance public understanding of healthcare budgeting will further support adoption and sustainability. Addressing these challenges, eThekwini Metro can establish a sustainable HHC model, alleviating institutional pressures while advancing health equity and outcomes. This approach sets a benchmark for healthcare innovation in similar socio-economic settings, offering actionable insights for both policy development and future research.

Conclusion

This study highlights the transformative potential of HHC as a sub-acute medical service in addressing the critical gaps in healthcare delivery within the eThekwini Metro. By decentralising healthcare provision, this model offers a practical solution to the challenges posed by rising chronic disease prevalence, aging populations and overburdened healthcare institutions. Grounded in theoretical frameworks such as the Systems Viability Monitoring Model, Porter's Diamond Model and the Value-Based Service Agendas framework, the findings emphasise the importance of systemic integration, stakeholder collaboration and resource optimisation in achieving sustainable and equitable healthcare outcomes. The results demonstrate significant public acceptance of HHC, with a strong preference among younger and educated populations, underscoring the importance of informed decision-making and cultural relevance.

Economic modelling confirms the potential for cost-efficiency through reduced hospitalisation rates, but challenges such as workforce shortages and limited digital infrastructure must be addressed to ensure scalability. The study underscores the need for strategic policy development, capacity-building initiatives and enhanced public-private partnerships to overcome systemic constraints and foster a sustainable healthcare framework.

These findings contribute valuable insights to the underexplored domain of HHC in middle-income countries, providing a foundation for policymakers, healthcare providers and researchers. By aligning global healthcare strategies with local socio-economic realities, this study advocates for the development of resilient healthcare systems that prioritise equity and efficiency. Future research should focus on longitudinal evaluations, technological integration and innovative funding mechanisms to optimise implementation and ensure the long-term success of HHC services in South Africa and similar contexts.

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