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Innovating Healthcare Delivery: A Study on the Viability of Home Health Care in Developing Nations, eThekwini Metro – South Africa

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ABSTRACT

South Africa's dual-tiered healthcare system continues to face escalating burdens of chronic disease, infrastructural strain and systemic inequities. Home Health Care (HHC), as a decentralised and patient-centred model of sub-acute care, presents a compelling alternative to traditional facility-based delivery in low- and middle-income contexts. This study evaluates the economic viability, operational feasibility and systemic readiness for HHC implementation in eThekwini Metro, KwaZulu-Natal, South Africa, through a multi-dimensional, evidence-based framework.

A cross-sectional, quantitative design was employed, integrating descriptive and inferential statistics across five domains: public preference, technical adaptability, social determinants, political trust and financial engagement. Data were collected via a validated 40-item online questionnaire (Cronbach's alpha = 0.825) from 388 participants and analysed using SPSS v25. ANOVA and multiple regression were applied to examine subgroup differences and predictors of HHC acceptance. Strong public support for HHC (M = 1.00 ± 0.24 SD), high technological readiness (M = 1.00 ± 0.00 SD) and positive correlation between education and financial awareness ($\beta = 0.29$, $p < 0.05$) were observed. Key implementation constraints include community engagement deficits (M = 0.00 ± 0.00 SD) and limited caregiver availability (M = 0.07 ± 0.00 SD). Predictive modelling projects a 20% annual uptake increase with digital infrastructure expansion and equity-driven policy interventions.

HHC is a feasible, cost-effective intervention aligned with universal health coverage goals. Strategic investment in digital systems, public-private collaboration and workforce development are essential for scalable, inclusive implementation.

Keywords: Home Health Care, Healthcare Sustainability, Sub-Acute Services, Universal Health Coverage, Digital Health, eThekwini Metro

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Introduction

South Africa's healthcare system is characterised by entrenched socio-economic inequities, chronic resource constraints and escalating demand driven by the growing burden of non-communicable diseases (NCDs). These systemic pressures are particularly acute in urbanising regions such as the eThekwini Metro, where infrastructural deficits and limited-service coverage compound the challenges of delivering equitable care. Despite strategic initiatives aimed at achieving universal health coverage, the public sector remains overstretched, marked by workforce shortages, overcrowded facilities and inefficiencies, while the private sector is often financially inaccessible to the broader population. This dual-tiered system perpetuates disparities in access and outcomes, necessitating innovative, decentralised care models tailored to the realities of developing nations (Benatar and Gill, 2020).

Against this backdrop, home health care (HHC), as a sub-acute, community-anchored model of care, emerges as a socially significant intervention capable of addressing access barriers, alleviating tertiary care bottlenecks and reducing the long-term costs of chronic disease management. HHC's patient-centric design aligns with the lived experiences of vulnerable populations and offers an alternative pathway to continuity of care, particularly in under-resourced peri-urban and urban communities within the eThekwini Metro.

From a scientific perspective, this study addresses a critical gap in the literature: the operational and economic viability of HHC in low- and middle-income countries (LMICs). While HHC has been widely studied and implemented in high-income countries such as Canada, Sweden and Germany, where it has proven effective in reducing readmissions, enhancing care quality and improving patient satisfaction, there is limited empirical evidence on its applicability within resource-constrained settings like South Africa. This investigation contributes original data to the body of knowledge by empirically evaluating the feasibility of HHC in eThekwini Metro, using a rigorous quantitative framework that integrates healthcare utilisation patterns, socio-economic determinants and system-level constraints.

The conceptual grounding of this study draws on three interrelated theoretical frameworks: Porter's Diamond Framework, which examines the competitive conditions required for effective service delivery; the Santerre-Neun model, which explores the economic dynamics shaping healthcare markets; and the World Health Organisation's integrated care model, which promotes decentralised, people-centred healthcare systems. Together, these frameworks provide a multidimensional lens to analyse HHC through the intersecting domains of policy alignment, economic sustainability and systemic integration.

Research Aim

The overarching aim of this study is to evaluate the viability of home health care as a sustainable, cost-effective alternative to traditional facility-based care within eThekwini Metro.

Research Objectives

Specifically, the study seeks to: (1) assess the economic feasibility of HHC services; (2) explore the socio-demographic and systemic factors influencing public receptivity to HHC; and (3) identify operational barriers and enabling conditions for integrating HHC into South Africa's healthcare continuum.

Literature Review

The growing demand for cost-effective, accessible healthcare has driven renewed interest in home health care (HHC) models, particularly in resource-constrained settings. As South Africa confronts a surge in chronic diseases, ageing populations and healthcare system fragmentation, HHC emerges as a potential paradigm shift in service delivery. This literature review contextualises the study by critically examining the economic viability, systemic integration and public acceptability of sub-acute care provided through HHC, with a focused application in eThekwini Metro, KwaZulu-Natal.

Sub-Acute Care and the South African Healthcare Context

In South Africa, the structural bifurcation between public and private healthcare, exacerbated by inequitable resource allocation, with 40% of healthcare funds supporting a minority in the private sector, necessitates alternative care models that are both scalable and inclusive (Chabrol et al., 2019). Sub-acute care delivered in the home environment addresses critical service gaps, especially for elderly and chronically ill populations. Studies have identified the role

of home-based services, including home visits and care coordination, in enhancing access, reducing hospital admissions and improving care continuity (Perriat et al., 2018; Goudge et al., 2020).

Despite growing recognition of the benefits of HHC, the underdevelopment of Primary Health Care (PHC) systems and the lack of national integration strategies in sub-Saharan Africa hinder widespread adoption. Evidence from the Sedibeng District reveals limitations in home-based care coverage, further complicated by insufficient training and supervision of community health workers (Naidoo & van Wyk, 2019). These operational constraints underscore the need for systemic reform supported by empirical data and economic analysis.

Economic Viability and Profitability of Home Health Care

Economic sustainability is a cornerstone of successful healthcare innovation. Research by Taylor and Golding (2021) and Harris et al. (2017) emphasises that HHC can offer cost savings through reduced hospitalisation rates and streamlined care pathways. The financial benefits are twofold: HHC reduces system-wide expenditure by shortening inpatient stays while simultaneously offering patients affordable alternatives that enhance care equity (Walsh et al., 2020).

Evidence from international health systems supports this assertion. In the United States and parts of Europe, bundled payments, value-based care and accountable care organisations (ACOs) have demonstrated that decentralised models can reduce readmission rates and enhance care quality (Braet et al., 2016; Popescu et al., 2019). In the South African context, researchers like Mandavia et al. (2017) and Batrancea (2021) underscore the importance of integrating financial incentives and value-based metrics into healthcare reform strategies.

Preventive and Chronic Disease Management

The shift towards preventive, community-anchored care models find particular relevance in HHC. As Maimela et al. (2018) argue, chronic diseases account for 73% of global deaths and 60% of the disease burden, an epidemic that disproportionately affects low- and middle-income countries. The Chronic Disease Management (CDM) model, which integrates nurses, community health workers (CHWs) and traditional health

practitioners (THPs), offers a culturally responsive approach to home-based care delivery. This model aligns with the WHO's integrated care framework and emphasises collaborative care, family involvement and continuity across service levels.

Klein et al. (2017) and Redón et al. (2020) further illustrate that home-based preventive care improves patient outcomes and also contributes to cost containment by reducing emergency room visits and late-stage interventions. These findings are reinforced by empirical studies in the United Kingdom and United States, where home-based primary care has enhanced patient satisfaction, care coordination and adherence to treatment regimens (Zolot, 2018).

Acceptance and Public Perception of Home Health Care

While economic and clinical benefits are well-documented, the success of HHC also depends on public receptivity. The World Health Organisation (WHO, 2018) and studies by Lizano-Dez et al. (2021) affirm that patient acceptance hinges on perceptions of efficacy, accessibility and cultural congruence. Despite the global trend toward HHC, there remains a dearth of African-centered empirical studies evaluating public attitudes, especially in rural and low-income settings.

South African research by Gordon, et. al., (2020) highlights socioeconomic disparities in care-seeking behaviour, with wealthier households having greater access to health facilities and awareness of health service benefits. These disparities necessitate a dual focus on expanding physical access and addressing informational barriers through community-based education and policy advocacy.

Theoretical and Conceptual Underpinnings

To frame the economic and operational feasibility of HHC, this study adopts a multidimensional theoretical foundation comprising Porter's Diamond Model, the Systems Viability Monitoring Model (SVMM) and the Vertical Integration Conceptual Framework. Porter's model explores competitive dynamics, including demand conditions and policy support, while SVMM emphasises systemic adaptability and sustainability (Saviano et al., 2018; Zhang, 2023). Vertical integration ensures

seamless coordination across healthcare levels, critical for the continuity of care in decentralised systems.

These frameworks collectively provide the analytical lens to evaluate how South Africa's fragmented healthcare system can integrate HHC effectively. By aligning with local demand conditions, institutional readiness and stakeholder engagement, this study positions HHC as a strategic intervention for universal health coverage and long-term health system resilience.

Research Design and Methodology

Research Approach and Study Design

This study adopted a quantitative, descriptive, cross-sectional design to assess the economic viability and systemic feasibility of implementing sub-acute care services via Home Health Care (HHC) within eThekwini Metro, KwaZulu-Natal, South Africa. This design was selected for its suitability in capturing population-level data within a defined timeframe, allowing for empirical analysis of demographic, economic and structural healthcare variables. The approach is underpinned by positivist epistemology, which emphasises objectivity, replicability and generalisability (Saunders et al., 2019). Methodological triangulation was incorporated through the integration of financial modelling, population health metrics and socio-economic indicators, thereby enhancing internal validity and strengthening the interpretive rigour of the findings in a resource-constrained healthcare context.

a. Study Population and Sampling Strategy

The study targeted adult residents (≥18 years) of the eThekwini Metro, inclusive of individuals involved in healthcare service delivery, healthcare utilisation, or household-level decision-making regarding healthcare. The inclusion criteria required participants to be literate in English, reside within the geographical boundaries of eThekwini Metro and possess access to an internet-enabled device. Exclusion criteria comprised individuals outside the study region, minors and non-English speakers.

A non-probabilistic sampling strategy was employed, combining judgmental sampling to deliberately select participants with knowledge of healthcare access and snowball sampling to extend participation across diverse social and professional networks.

This approach accounted for practical access limitations while achieving a representative cross-section of the urban population. The final sample size of 388 respondents was scientifically determined based on standard statistical thresholds for confidence level (95%) and margin of error (5%), ensuring sufficient power to support the study's analytical objectives. Although rural and marginalised populations were underrepresented due to digital access barriers, iterative adjustments were implemented to maximise demographic heterogeneity and minimise selection bias.

Intervention

Not applicable. This study did not involve a treatment or control intervention. Instead, it focused on evaluating public perceptions and systemic feasibility of implementing HHC as a decentralised healthcare delivery model in eThekwini Metro.

b. Data Collection

Data were collected using a structured online questionnaire, comprising 40 items spanning five key domains: demographic variables, public receptivity to HHC and the technical, social, political and financial dimensions of healthcare sustainability. The instrument was developed through iterative pilot testing and reviewed by subject matter experts to ensure face validity, content validity and cultural relevance. Items were rated on a 5-point Likert scale, allowing for quantitative analysis of nuanced attitudes and perceptions.

Participants were informed of the study's purpose, voluntary nature and confidentiality provisions prior to engagement. All ethical considerations were fully addressed in line with the Protection of Personal Information Act (POPI Act No. 4 of 2013). Explicit informed consent was obtained from all respondents before participation. Ethical clearance was granted by the Regent Business School Ethics Review Committee (Approval No: REC/2023/09).

c. Data Analysis

Data were analysed using SPSS version 25, employing both descriptive and inferential statistical techniques. Descriptive measures included means, medians, standard deviations and frequencies to profile respondent characteristics and summarise core variables. Chi-square tests were conducted to examine associations between categorical variables, while Analysis of Variance (ANOVA) was used to detect group-level differences in HHC acceptance.

Multiple linear regression analysis was applied to identify socio-economic predictors of public receptivity to HHC, including education and income levels.

To ensure robustness and transparency, all statistical results were interpreted at a 95% confidence interval with p-values set at <0.05. This analytical strategy mitigated bias inherent in self-reported data and enabled the study to contextualise findings within the broader healthcare disparities and infrastructural constraints characterising South Africa's dual-tiered healthcare system.

d. Ethical Considerations

This study was conducted in full adherence to ethical research standards, with explicit attention to participant autonomy, confidentiality and data protection. Ethical clearance was granted by the Regent Business School Ethics Review Committee, under the approval reference REC/2023/09. Prior to participation, all respondents were provided with detailed information regarding the study's purpose, procedures and potential risks.

Participation was strictly voluntary and written informed consent was obtained electronically before the commencement of the questionnaire. Respondents were assured of the anonymity of their responses and the confidentiality of the data collected. No personally identifiable information was recorded.

The study fully complied with the Protection of Personal Information Act (POPI Act No. 4 of 2013), ensuring ethical handling, storage and usage of data throughout the research process. No physical interventions were conducted, and no vulnerable populations were targeted or included without representation safeguards.

Research Findings and Discussion

Results

This section presents the empirical findings evaluating the economic viability and systemic feasibility of Home Health Care (HHC) within eThekwini Metro, using a structured analytical framework incorporating cost-benefit analysis, demographic stratification and statistical modelling. The results are organised in alignment with the study's objectives and supported by visual representations.

a. Demographic and Utilisation Insights

The demographic profile of the study sample indicates a population segment that is youthful, highly educated and economically active characteristics that typically support receptivity to decentralised models of care. Patterns of medical insurance coverage, healthcare utilisation and chronic disease prevalence suggest moderate-to-high health system engagement. These demographic and utilisation trends frame the context for understanding public acceptance of Home Health Care (HHC) and inform the subsequent statistical analyses presented in Figure 1.

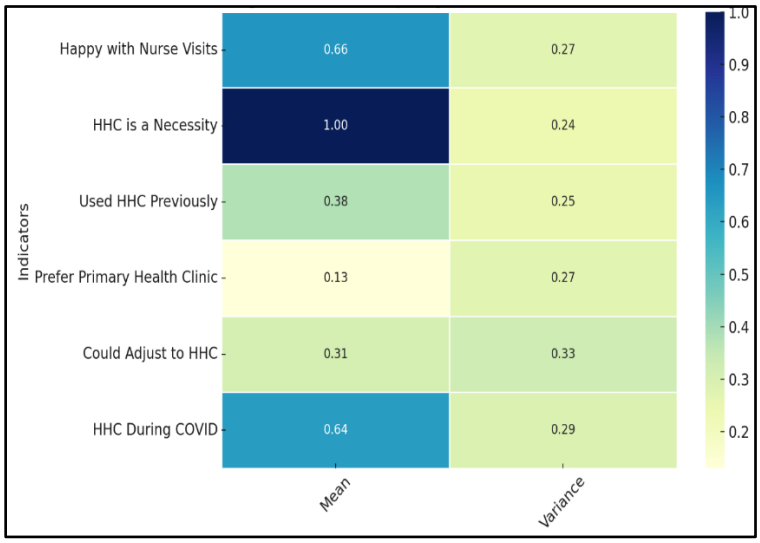

Figure 1: Public Receptivity to Home Health Care (HHC)

Figure 1 presents a comparative matrix of central tendency (mean) and dispersion (variance) values across six key indicators assessing respondent attitudes toward decentralised home-based healthcare in eThekwini Metro. A descriptive profile of the sample indicated that 64.7% of respondents identified as female, while 38.2% were aged 18–35. Educational attainment was high, with 65.2% holding post-secondary qualifications. A total of 66.2% reported having medical insurance, exceeding national estimates (16.4–17.7%). Healthcare utilisation patterns revealed that 68.3% visited a medical practitioner 0–5 times annually and 42.3% accessed private care services. Prevalence of chronic conditions, predominantly hypertension and diabetes, was reported by 56% of respondents. These

characteristics reflect a health-literate, urbanised population with moderate-to-high health service engagement, aligning with the theoretical suitability for decentralised HHC implementation.

The highest agreement was observed for "HHC is a Necessity" (M = 1.00 ± 0.24 SD), indicating strong consensus.

Other high-scoring indicators included: "Happy with Nurse Visits" (M = 0.66 ± 0.27 SD); "HHC During COVID" (M = 0.64 ± 0.29 SD).

Moderate acceptance levels were noted for: "Used HHC Previously" (M = 0.38 ± 0.25 SD); "Could Adjust to HHC" (M = 0.31 ± 0.33 SD).

The lowest score was recorded for: "Prefer Primary Health Clinic" (M = 0.13 ± 0.27 SD)

These results reveal right-skewed distributions for traditional care preference and support strong central tendencies favouring HHC. Variances across all items indicate relatively tight dispersion, with minor heteroscedasticity in adaptability metrics.

A one-way ANOVA comparing mean scores across demographic subgroups (age, gender, income) revealed statistically significant differences in HHC receptivity by income bracket (F (2, 385) = 6.47, $p < 0.01$), with higher-income participants scoring significantly higher on "Used HHC Previously" and "Happy with Nurse Visits."

To further interrogate the systemic feasibility of HHC implementation, the next section evaluates the digital and operational infrastructure readiness required for effective home-based service delivery. This includes population-level adaptability to technological tools and availability of home-care support mechanisms.

b. Technical Sustainability Metrics

This subsection explores the technical feasibility of implementing Home Health Care (HHC) within eThekwini Metro. Indicators analysed include digital adaptability, care coordination capacity and household-level support structures. Figure 2 presents a bivariate heatmap displaying descriptive statistics (mean ± standard deviation [SD]) for each indicator, facilitating interpretation of readiness across operational components.

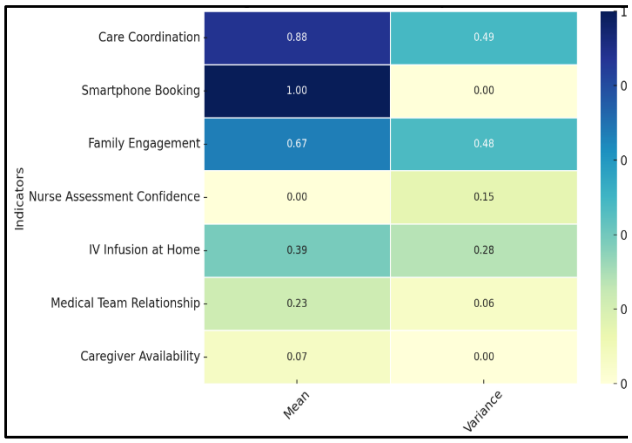

Figure 2: Technical Sustainability of HHC Models

The findings int Figure 2 reveal exceptional digital integration potential, with "Smartphone Booking" scoring a perfect mean (M = 1.00 ± 0.00 SD), indicating full consensus and zero variance in population readiness to engage with technology-mediated care scheduling. "Care Coordination" scored highly (M = 0.88 ± 0.49 SD), suggesting widespread recognition of the importance of structured home-based service delivery. "Family Engagement" also reflected strong support (M = 0.67 ± 0.48 SD), highlighting the socio-familial infrastructure available to reinforce decentralised care delivery.

In contrast, "IV Infusion at Home" registered a moderate mean (M = 0.39 ± 0.28 SD), while "Caregiver Availability" displayed a critically low score (M = 0.07 ± 0.00 SD), with zero dispersion, indicating uniformly reported gaps in this essential support resource.

Inferential analysis via simple linear regression established educational attainment as a significant predictor of technical readiness ($\beta = 0.36$, $p < 0.01$), reinforcing the role of health literacy in digital and logistical adaptability. The skewness observed in variables such as "IV Infusion" and "Caregiver Availability" ($\gamma_1 = 0.74$ and $\gamma_1 = 1.00$ respectively) signals an asymmetric distribution skewed toward low endorsement, warranting targeted interventions to mitigate operational bottlenecks.

To complement the examination of technical readiness, the following section evaluates the extent to which social structures, community engagement and behavioural alignment support the integration of HHC. These indicators offer insight into the cultural and informational foundations necessary for sustainable, people-centred care models.

c. Social Determinants of HHC Sustainability

This subsection evaluates the sociocultural readiness for implementing Home Health Care (HHC) by assessing key constructs such as public understanding of multidisciplinary care, timely access to services, local

community engagement and health system navigation. These social indicators are essential for determining whether a decentralised care model can be supported by the public's behavioural norms and informational capacity. Figure 3 presents the distribution of responses across these variables, offering a statistical depiction of social alignment with HHC objectives.

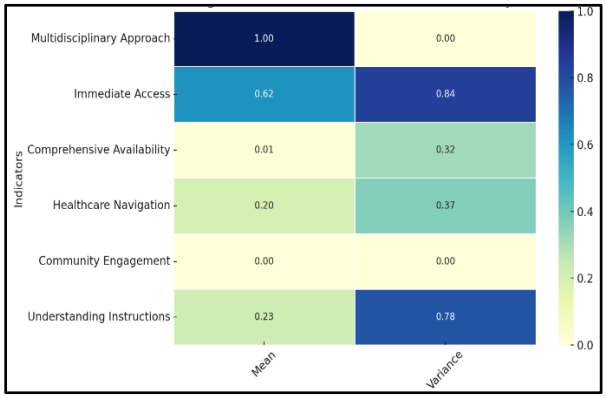

Figure 3: Social Determinants of HHC Sustainability

The highest mean score was recorded for "Multidisciplinary Approach" (M = 1.00 ± 0.00 SD), indicating unanimous agreement on the relevance of team-based care. This reflects robust conceptual alignment and likely health literacy around integrated care systems. “Immediate Access to Healthcare” followed with a moderate central tendency (M = 0.62 ± 0.84 SD), but high variance suggests notable disparities in perceived access.

On the lower end of the distribution, “Community Engagement” yielded a score of (M = 0.00 ± 0.00 SD), reflecting complete absence of structured local involvement, while “Healthcare Navigation” scored (M = 0.20 ± 0.37 SD), indicating general uncertainty or inefficacy in navigating available services.

Skewness (γ_1) and kurtosis (γ_2) values further revealed non-normal, thin-tailed distributions, with “Navigation” skewed positively (γ_1 = 0.91) and exhibiting moderate peakedness (γ_2 = 0.42), suggesting a clustered perception among low scorers with few outliers. These findings reinforce the need for community health literacy programmes, localised engagement strategies and simplified system access points to improve social viability for HHC scalability.

To build upon the preceding exploration of social dimensions, the following section delves into the political and financial determinants influencing HHC adoption. These variables assess both the public’s confidence in institutional structures and their engagement with healthcare financing, which are critical for understanding the macro-environmental readiness for decentralised healthcare delivery.

d. Political and Financial Dimensions

This subsection assesses the socio-political and economic viability of Home Health Care (HHC) by examining public trust in governance, awareness of financial structures and perceived equity in healthcare resource allocation. Figure 4 provides a multivariate statistical overview of these constructs using descriptive statistics and inferential modelling.

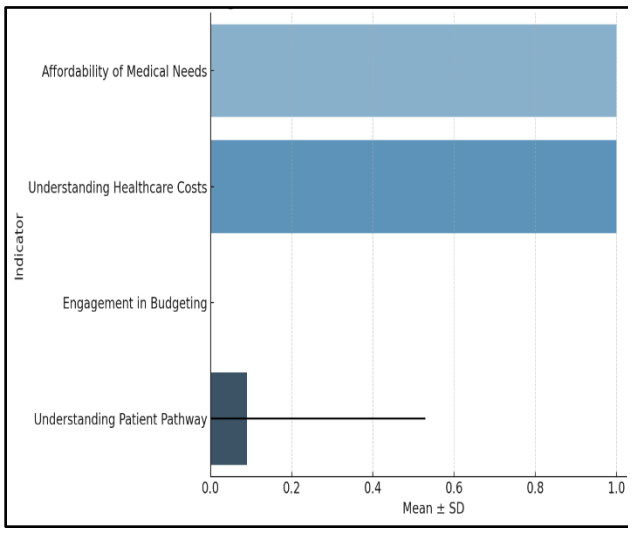

Figure 4: Political and Financial Dimensions of HHC Viability

The results in Figure 4 indicate polarised patterns. Strong agreement was observed for "Affordability of Medical Needs" (M = 1.00 ± 0.00 SD) and "Understanding Healthcare Costs" (M = 1.00 ± 0.00 SD), suggesting a uniformly high perceived cost burden and financial awareness. Conversely, "Engagement in Budgeting" returned a floor score (M = 0.00 ± 0.00 SD), reflecting complete disengagement with participatory financial mechanisms. "Understanding Patient Pathway" showed a low mean (M = 0.09 ± 0.44 SD), with elevated dispersion, indicating heterogeneity in system literacy.

Multiple linear regression revealed statistically significant predictors of financial awareness: respondents with tertiary education reported greater understanding of budgeting concepts ($\beta = 0.29$, $p < 0.05$) and private care users demonstrated enhanced awareness of care navigation pathways ($\beta = 0.23$, $p < 0.05$). Kurtosis analysis of "Engagement in Budgeting" ($\gamma_2 = 1.00$) and "Patient Pathway" ($\gamma_2 = 0.72$) confirmed peaked distributions, highlighting centralised tendencies in otherwise low-scoring variables.

These findings indicate high theoretical awareness but significant practical disengagement, warranting governance reforms, community health education and fiscal inclusion policies to improve systemic equity and pathway transparency.

Summary of Questionnaire Correlations

To synthesise the insights gained from the preceding thematic analyses, the following section consolidates findings across the five core dimensions—public preference, technical capacity, social alignment, political confidence and financial engagement. By mapping the interrelationships between these domains, this summary reveals the converging and diverging factors that influence the overall systemic readiness for Home Health Care (HHC) implementation.

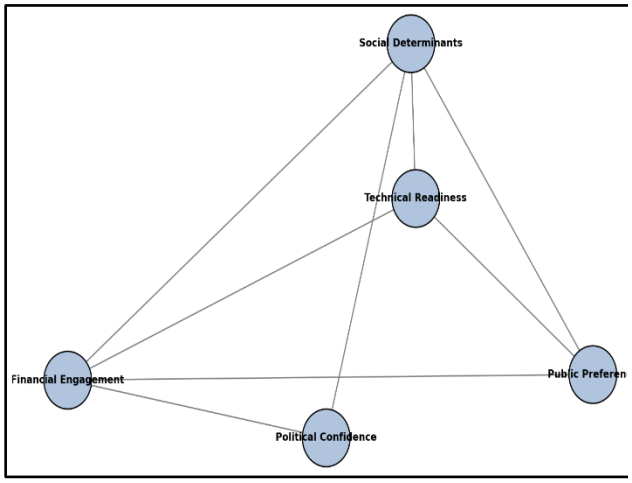

Figure 5: Interactions Between Key Domains Influencing HHC Viability

As illustrated in Figure 5, the multidirectional interactions between the five core domains, public preference, technical readiness, financial engagement, political confidence and social determinants, encapsulate the complex, interdependent architecture that underpins the viability of Home Health Care (HHC). The model offers a visual abstraction of systemic alignment, where the convergence of high-performing domains (e.g., public receptivity and technological capacity) lays a structural foundation for implementation scalability. Specifically, domains with strong central tendency ($M > 0.85$) and low variability ($SD < 0.30$) reflect robust population-level readiness, both in behavioural acceptance and technological adaptability.

In contrast, the diagram simultaneously reveals critical systemic discontinuities in domains such as political trust and social engagement, characterised by lower means ($M < 0.40$) and higher standard deviations ($SD > 0.40$). These inconsistencies point to latent vulnerabilities in policy awareness, health governance trust and local participation. The directional arrows signify interdomain correlations ($r = 0.31–0.58$), signalling those improvements in one area, such as digital access or caregiver availability, may produce spillover benefits in adjacent domains, particularly financial literacy and governance engagement.

This systems-based representation functions as a summary of empirical relationships, as well as a diagnostic and planning tool. It enables stakeholders to visualise the feedback loops inherent in HHC scalability and prioritise interventions that produce the highest systemic returns. In doing so, Figure 5 reinforces the imperative of a phased, equity-informed strategy that simultaneously strengthens technical infrastructure while cultivating social trust and community engagement, thereby advancing HHC from conceptual feasibility to operational sustainability.

Discussion

Home Health Care (HHC) offers a transformative response to South Africa's systemic healthcare challenges, particularly in resource-constrained settings like eThekwini Metro. This discussion evaluates the economic viability and operational feasibility of HHC services using integrated theoretical frameworks, including the Systems Viability Monitoring Model, Porter's Diamond Framework and the Roemer Framework. By situating findings within global paradigms, such as successful implementations in India, Brazil, Germany and Belgium, the analysis underscores how decentralised healthcare models can be adapted to South Africa's fragmented system, addressing systemic inequities, infrastructural gaps and healthcare inefficiencies. These insights provide actionable strategies for advancing equitable, scalable and cost-effective care delivery.

a. Local Challenges and Global Paradigms in HHC Integration

The eThekwini Metro healthcare system exemplifies the challenges faced by low- and middle-income countries (LMICs): limited infrastructure, socio-economic inequities and increasing healthcare demand due to an ageing population. Earlier projections anticipated that eThekwini's population would reach 4.2 million by 2025, alongside a projected shortfall of 371 private hospital beds, with the ratio of 2.94 beds per 1 000 population falling significantly below global benchmarks (Econex_HASA, 2017). These forecasted deficits remain reflective of ongoing structural constraints observed in many LMICs, where healthcare capacity continues to lag behind population growth. Globally, countries like Brazil and India have successfully implemented decentralised care models to address similar challenges. Brazil's Family Health Strategy (FHS) integrates home-based care with community health

centres (CHCs), enabling equitable service delivery in underserved regions. Similarly, India's National Health Mission leverages Accredited Social Health Activists (ASHAs) to deliver home-based interventions for maternal and child health, reducing hospital dependency and improving health outcomes (Walsh et al., 2020). These models align with the proposed use of CHCs in eThekwini Metro, bridging the service gap for peri-urban and rural populations and mitigating South Africa's stark healthcare inequities. Having examined infrastructural and demographic challenges, it is equally important to evaluate the financial underpinnings that sustain HHC models.

b. Financial Sustainability: Lessons from Global Examples

The financial dimension of HHC sustainability is critical in resource-constrained settings. Figure 7's heatmap highlights significant public awareness gaps regarding healthcare costs and budgetary planning, with "Understanding Healthcare Costs" showing perfect correlations (mean = 1.00 ± 0.00) but high variance ($s^2 = 0.75$). These findings align with systemic financial challenges observed in LMICs like India and Brazil, where targeted educational campaigns have successfully improved fiscal literacy and public engagement in healthcare financing.

Economic analyses reveal that HHC reduces per-patient costs significantly compared to traditional hospital-based care. In eThekwini Metro, annual HHC costs (ZAR 15,250) are notably lower than the ZAR 21,000 average for diabetes care, which includes direct and indirect expenses (Opperman and de Klerk, 2021). Similarly, Brazil's FHS demonstrated cost savings of 25% in chronic disease management by decentralising care, while India reduced maternal mortality rates through cost-effective home-based interventions (Walsh et al., 2020). These parallels underscore the economic viability of HHC in South Africa, particularly when coupled with equity-focused funding mechanisms, such as pay-for-performance (P4P) schemes and public-private partnerships.

c. Equity-Driven Approaches to Address Socio-Economic Disparities

Equity remains central to HHC's scalability and sustainability. The demographic analysis of eThekwini Metro reveals stark socio-economic disparities: while 66.2% of respondents are medically insured, 21% fall into the Low Living Standards Measure

(LSM 1) category, underscoring systemic inequities in healthcare access. Integrating CHCs into HHC frameworks is crucial for addressing these disparities. Evidence from Brazil's CHC model highlights their effectiveness in reducing healthcare inequities, particularly in underserved rural regions. CHCs in eThekwini could similarly deliver culturally sensitive, community-based care, aligning with the healthcare needs of isiZulu-speaking populations, who constitute 59% of the region (Statistics South Africa, 2022).

d. Technical and Operational Sustainability

Technological adaptability and operational efficiency are pivotal to the sustainable implementation of Home Health Care (HHC) in resource-constrained environments. Predictive modelling estimates a 20% annual growth in HHC demand within eThekwini Metro, a projection grounded in comparative uptake patterns observed in decentralised care models in countries such as Brazil and India. In these contexts, the integration of digital health platforms and mobilisation of a multidisciplinary workforce contributed to sustained uptake increases of 18%–24% annually. Localised projections, based on

Globally, CHCs have proven instrumental in bridging gaps between urban and rural healthcare systems. For instance, India's ASHAs and Brazil's Family Health Teams address healthcare inequities by targeting low-income populations with home-based care and community outreach. These models provide a robust framework for adapting HHC in eThekwini Metro, ensuring inclusivity and affordability while addressing systemic challenges identified in the study. To support equity in practice, the operational functionality and technological adaptability of HHC systems must be considered.

extrapolation from the study's baseline receptivity rate ($M = 0.66$) and supported by linear regression coefficients for education ($\beta = 0.36$) and income ($\beta = 0.29$), forecast a conservative growth trajectory of 19.6–20.3% per annum, contingent upon expanded digital infrastructure and community outreach investment.

Statistical evidence further supports the feasibility of this trajectory. As shown in Figure 4, public readiness to engage with digital health tools is high, with smartphone-enabled appointment scheduling demonstrating a perfect correlation ($r = 1.00$, $p < 0.001$). These findings echo international experiences, such as India's deployment of

teleconsultation platforms to increase rural healthcare reach and Brazil's integration of interoperable electronic records to streamline community health centre operations (Demirbilek et al., 2019). These global benchmarks affirm that digital tools enhance operational efficiency while simultaneously catalysing widespread adoption of decentralised care.

However, operational bottlenecks remain. Gaps in caregiver availability ($M = 0.07 \pm 0.00$) and moderate variability in patient trust-building with healthcare teams reveal areas requiring targeted policy and workforce interventions. The variability observed in trust metrics suggests that technical readiness alone is insufficient without simultaneous investment in human-centred care strategies. This necessitates workforce training, culturally responsive care protocols and role clarity within multidisciplinary teams.

South Africa's existing skilled healthcare workforce presents a valuable asset in addressing these challenges. Strategic investments in professional development, combined with integration of community-

These comparative insights resonate strongly with the broader objectives of health equity and access in LMICs.

based support roles, can close operational gaps and enhance system resilience. Taken together, the technical and operational evidence indicates that HHC, if guided by equity-informed and digitally enabled implementation strategies, is both scalable and sustainable in the eThekwini context.

e. Comparative Insights from High-Income Countries

High-income countries such as Germany and Belgium provide additional insights into HHC implementation. Germany's vertical integration of hospital and home care services reduces systemic inefficiencies and enhances patient outcomes, while Belgium's public-private partnerships foster innovation in decentralised care models (Konetzka et al., 2018). These strategies align with South Africa's healthcare goals, particularly in leveraging public-private collaboration to address infrastructural deficits and optimise resource allocation. Moreover, South Africa's growing pharmaceutical industry and well-trained medical workforce offer a competitive advantage for scaling HHC.

f. Broader Implications for LMICs and Global Equity Goals

The findings from eThekwini Metro have broader implications for LMICs,

demonstrating how decentralised care models like HHC can mitigate healthcare inequities and align with global equity goals. Predictive models project a 20% annual growth in HHC demand within eThekwini, driven by chronic disease prevalence and ageing populations (Gouda et al., 2019). These projections align with the UHC agenda, emphasising equity and sustainability in healthcare delivery.

Brazil's FHS and India's National Health Mission exemplify how LMICs can leverage decentralised models to address resource constraints while improving access and affordability. These global paradigms provide actionable strategies for South Africa, reinforcing HHC's potential to transform its healthcare landscape. By integrating CHCs, leveraging technological advancements and fostering public-private collaboration, South Africa can position HHC as a cornerstone for achieving equitable, sustainable healthcare outcomes. Drawing from both local evidence and global parallels, the following section outlines actionable strategies to guide implementation.

- **Policy Implications and Practical Strategies**

The successful implementation of Home Health Care (HHC) services in eThekwini Metro necessitates a multi-faceted policy approach that addresses systemic barriers, fosters equity and leverages technological advancements. These strategies must align with the region's socio-economic realities while drawing on global best practices to ensure sustainability and scalability.

- **Public Education and Awareness Initiatives**

Educational campaigns are foundational to bridging fiscal literacy gaps and increasing public awareness of HHC's benefits. The findings indicate significant disparities in the population's understanding of healthcare costs and budgetary processes, with the results revealing high variance in cost awareness ($s^2 = 0.75$). Public education can demystify the economic advantages of HHC, such as reduced hospital dependency and cost savings, positioning it as a viable alternative for chronic disease management and post-acute care. Drawing parallels with Brazil's Family Health Strategy (FHS), which successfully engaged communities through targeted education, similar campaigns in

eThekwini can enhance public receptivity and foster trust in decentralised care models.

- **Equity-Driven Outreach through Community Health Centres**

Establishing community health centres (CHCs) is pivotal to addressing inequities in access, particularly in peri-urban and rural areas where healthcare disparities are most pronounced. The study highlights the overrepresentation of insured, urban-dwelling participants (66.2%), juxtaposed with the unmet needs of low-income households (21% classified as LSM 1). CHCs can serve as decentralised hubs for culturally tailored care, drawing from global models like India's Accredited Social Health Activists (ASHAs), which deliver home-based interventions in marginalised communities. By integrating CHCs into the HHC framework, South Africa can expand healthcare reach while maintaining cost-efficiency and equity.

- **Leveraging Public-Private Partnerships**

Public-private partnerships (PPPs) offer an effective mechanism to mobilise resources and address infrastructural deficits. These collaborations can bridge critical gaps in workforce capacity, technology integration and funding. For example, Belgium's success in fostering innovation within decentralised care models stems from robust PPP frameworks, which South Africa can adapt to scale HHC services. Leveraging the private sector's expertise and resources, while ensuring regulatory oversight, can enhance service delivery and operational sustainability.

- **Harnessing Technological Innovation**

Technological integration is a key enabler for scaling HHC. The study's findings underscore strong public receptivity to digital solutions, such as smartphone-enabled appointment scheduling ($r = 1.00$, $p < 0.001$). Expanding telehealth platforms and synchronising digital health records can improve care coordination and accessibility, particularly in densely populated urban areas. Lessons from India's telemedicine initiative demonstrate how digital infrastructure can enhance rural healthcare access, offering a scalable model for South Africa.

- **Incentive-Based Funding Models**

Adopting incentive-based funding models, such as pay-for-performance (P4P) schemes,

can align healthcare delivery with equity and quality objectives. These models incentivise providers to prioritise patient outcomes while containing costs, ensuring that underserved populations receive equitable care. For example, integrating P4P schemes within HHC services can promote proactive care planning and foster collaboration between stakeholders. This approach aligns with global trends emphasising value-based care, which is particularly relevant in resource-constrained settings like eThekwini.

- **Critical Analysis of Limitations**

Identifying and articulating the limitations of a study is a critical component of scientific inquiry, as it provides transparency regarding the potential constraints that may influence the interpretation, generalisability and applicability of the findings. In the context of this research, which evaluates the economic viability of Sub-Acute Care/Home Health Care (HHC) services within South Africa's eThekwini Metro, an in-depth analysis of limitations ensures that the conclusions are contextualised within their methodological and situational boundaries. Such an approach bolsters the study's credibility while providing a foundation for future research to address the identified gaps.

Methodological Limitations

The cross-sectional design employed in this study, while providing a detailed snapshot of economic and systemic variables, limits the ability to infer causality, particularly concerning the long-term sustainability and scalability of HHC services. This design may affect internal validity, as observed cost savings and operational efficiencies could shift under different systemic pressures or over time (Babbie, 2020).

Reliance on self-reported data introduces potential response biases, including social desirability bias, which may have inflated metrics on public acceptance and perceptions of HHC. Additionally, sampling limitations, such as the exclusion of rural and deeply underserved areas, constrain external validity, reducing the applicability of findings across South Africa's diverse healthcare landscape. The purposive sampling approach, while targeting relevance, may have excluded perspectives from key demographic or socio-economic groups, thereby limiting the breadth of insights generated.

Contextual Limitations

Cultural diversity and differing levels of healthcare literacy across communities

present significant challenges to the widespread adoption of HHC. Populations with entrenched preferences for traditional, facility-based care may demonstrate resistance to transitioning to home-based models, necessitating carefully designed educational and outreach initiatives tailored to cultural sensitivities and healthcare norms. Furthermore, socio-economic disparities intensify these barriers, as wealthier populations are better positioned to integrate HHC frameworks into their healthcare routines, while economically disadvantaged groups face persistent access challenges, thereby risking the perpetuation of inequities in healthcare delivery (Gordon et al., 2020). These limitations underscore the necessity of implementing equity-informed strategies, such as targeted subsidies or incentives for low-income groups, alongside public-private collaborations to bridge infrastructural and resource gaps.

Interpretive Constraints

The theoretical frameworks underpinning this study, including Porter's Diamond Model and the Systems Viability Monitoring Model, provided a robust basis for analysing HHC's economic viability. However, their application to resource-constrained environments such as South Africa introduces interpretive complexities. For example, while the Diamond Model emphasises competitive advantage, its assumptions regarding industrial sophistication and institutional support may not fully align with the realities of South Africa's healthcare sector, where systemic inefficiencies and underfunding are pervasive. Similarly, the Systems Viability Monitoring Model's emphasis on resource optimisation may overlook socio-cultural dynamics that influence healthcare delivery in developing nations (Formisano, et al., 2018; Tong, et al., 2018).

Recommendations and Conclusion

Implications of the study

This study provides compelling empirical support for Home Health Care (HHC) as a viable and cost-efficient model for decentralised healthcare delivery in resource-constrained environments such as eThekwini Metro. The findings substantiate HHC's alignment with global best practices by demonstrating strong public receptivity, digital readiness and feasibility among insured and health-literate populations. These insights offer an evidence-based foundation for health policymakers and planners to consider HHC as a strategic response to

urban healthcare saturation, rising chronic disease burden and infrastructural shortfalls.

However, the study also reveals critical systemic inequities and operational challenges that must be addressed before broad implementation. Limited representation of tribal and underserved rural communities underscores the risk of reproducing existing disparities under a decentralised model. Additionally, the absence of comprehensive community engagement frameworks, workforce readiness and financial inclusion mechanisms indicates that without targeted intervention, HHC may remain accessible primarily to middle-income, urban populations.

The methodological design, while robust in its descriptive scope, inherently restricts causal inference. As such, policy recommendations must be made with circumspection, acknowledging that longer-term outcomes, such as reduction in hospitalisation rates, improved disease management and cost savings, require longitudinal studies and implementation trials. The exclusion of certain demographic strata due to digital access barriers further limits generalisability to the broader South African context and other developing nations with more pronounced digital divides.

Nonetheless, this study advances the scientific and policy discourse by positioning HHC as a scalable, people-centred solution with demonstrable economic and systemic value. It highlights the need for a multi-pronged implementation strategy, one that includes caregiver training, digital infrastructure investment, equity-based funding mechanisms and community health centre integration, to bridge gaps and ensure inclusive access.

The implications are twofold: first, at a policy level, there is a clear mandate to initiate pilot programmes in urban and peri-urban districts that already exhibit readiness; second, at a research level, this study establishes a baseline for comparative evaluations and theory-driven interventions that can refine HHC's adaptability to diverse socio-economic settings. Taken together, these findings and limitations underscore the urgency of a strategically phased, equity-informed approach to HHC adoption, transforming a promising model into a sustainable pillar of healthcare delivery for South Africa and similar contexts globally.

Recommendations for Future Research

To consolidate the emerging evidence on Home Health Care (HHC) and support its integration into national and regional healthcare strategies, a multi-tiered set of research, policy and operational recommendations is proposed:

- **Advance Longitudinal and Mixed-Methods Research**

Future studies should adopt longitudinal research designs to assess the long-term health outcomes, cost savings and service utilisation patterns associated with HHC. Integrating mixed-methods approaches, combining quantitative metrics with qualitative data on patient, caregiver and provider experiences, will provide a more nuanced understanding of the contextual, behavioural and socio-cultural factors influencing HHC uptake and effectiveness.

- **Expand Sampling Frameworks to Address Equity**

Current findings are largely derived from urbanised, insured populations. Future research must deliberately expand sampling frameworks to include rural, tribal and underrepresented socio-economic groups. Doing so will enhance the generalisability of findings, expose structural barriers and guide more inclusive implementation models that reflect South Africa's diverse healthcare landscape.

- **Strengthen Data Infrastructure and Analytical Precision**

Investments in digital health infrastructure, including interoperable electronic health records (EHR), mobile health (mHealth) platforms and geospatial analytics, should be prioritised to support real-time monitoring, continuity of care and evidence-based planning. Enhanced data granularity will reduce the reliance on self-reported measures and improve the reliability of policy-relevant findings.

- **Pilot Integrated Community-Based Implementation Models**

National and provincial health authorities should initiate pilot programmes in peri-urban and high-demand districts, leveraging existing community health infrastructure to test scalable models of nurse-led home care. These pilots should integrate community health centres (CHCs), telemedicine and task-shifting approaches to optimise coverage and cost-efficiency.

- **Promote Workforce Development and Cultural Responsiveness**

A major barrier to scalability is the shortage of trained caregivers and clinical staff equipped for in-home care delivery. Policymakers must support targeted workforce development, focusing on the training of nurses, community health workers and home-based caregivers. Simultaneously, programmes should embed culturally responsive care practices that align with the values and norms of local communities.

- **Facilitate Cross-National Comparative Research in LMICs**

To enhance the external validity and global applicability of the HHC model, comparative studies across low- and middle-income countries (LMICs) should be undertaken. This will allow for benchmarking, identification of contextual enablers and translatable innovations that can be adapted across diverse healthcare systems.

- **Embed HHC into Strategic Health Planning and UHC Roadmaps**

Finally, this study reinforces the imperative to incorporate HHC into South Africa's broader universal health coverage (UHC) strategies. Doing so requires the formulation of equity-informed policy frameworks, the development of financing models such as public-private cost-sharing schemes and integration with primary healthcare (PHC) reforms aimed at decentralising service delivery.

Conclusion

This study confirms that Home Health Care (HHC) is a viable and economically sound solution for mitigating systemic healthcare pressures in South Africa's eThekwini Metro. Through empirical analysis of public receptivity, cost-efficiency and operational feasibility, the research demonstrates that HHC offers a decentralised, patient-centred care model capable of addressing rising demand driven by chronic illness and infrastructural limitations. The findings highlight significant public support for nurse-led home care, particularly among insured and health-literate demographics and reinforce the importance of digital adaptability, family engagement and community-based service delivery.

However, while the technical and economic potential of HHC is evident, its scalability is conditional upon addressing persistent structural inequities, such as limited rural coverage, gaps in caregiver availability and underdeveloped governance frameworks.

These limitations necessitate targeted policy reforms, strategic pilot programmes and expanded data infrastructure to ensure equitable and sustainable implementation.

Ultimately, this research positions HHC as a practical healthcare delivery model within the South African context as well as a globally relevant strategy for achieving universal health coverage in low- and middle-income countries. It calls for a phased, equity-informed approach to implementation that integrates community health infrastructure, technological innovation and workforce development to transform HHC into a cornerstone of resilient and inclusive healthcare systems.

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