



Analysis of the Ghanaian Health System and Patients Safety within the IHI Triple Aim Framework

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Abstract

Objective: To analyze Ghana's healthcare system challenges through the Institute for Healthcare Improvement's Triple Aim framework encompassing population health, patient experience and per capita cost metrics.

Method: Dimensional analysis of peer-reviewed papers, government data and case studies assessed population health indicators and equity, literature on patient perspectives regarding quality and responsiveness of care along with evaluation of cost trends and deficiencies driving expenditure growth.

Results: Gaps persist in universal health coverage amid rural-urban disparities in access and financial protection. Care experiences vary significantly by socioeconomic status and geography. Rising costs attributed to inefficiencies in areas like procurement and prescriber practices.

Scientific Novelty: Unique application of Triple Aim framework for structured health systems analysis in a lower-middle income sub-Saharan country enabling robust diagnosis of coverage, quality, sustainability gaps.

Practical Significance: Demonstrates utility of balanced Triple Aim methodology for health policymakers in low-resource settings to systematically evaluate healthcare priorities across access, outcomes, experiences and costs.

Keywords: Triple Aim, health systems analysis, universal health coverage, healthcare access, patient experience

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Introduction

Ghana has prioritized healthcare investments and attained notable improvements in health outcomes over the past two decades evident in rising life expectancy and declining child mortality rates (Atuoye et al., 2017). Key universal health coverage (UHC)-oriented policies like the National Health Insurance Scheme (Duku et al., 2015) have enhanced population access and utilization of health services.

However, significant disparities remain across income and geographic lines regarding both health status and healthcare access metrics (Kumi-Kyereme et al., 2017). Poorer rural communities particularly face disproportionate burden of communicable diseases and maternal health complications arising from shortages of health workers, infrastructure and enrollment in financial risk protection schemes (Novignon et al., 2022). Concurrently, the rapid pace of health expenditure growth at nearly twice the rate of economic expansion raises sustainability concerns (Durairaj & Evans, 2010).

This calls for structured health systems performance assessment to inform policies and programs for equitable UHC attainment. This analysis applies the Institute for Healthcare Improvement's Triple Aim framework to evaluate Ghana's progress and priority gaps across population health measures, patient experiences and per capita costs (Arhin et al., 2023).

Objective

To conduct a systematic situational analysis of Ghana's healthcare delivery achievements, deficiencies and reform needs using the IHI Triple Aim dimensions.

Sub-objectives

- i) Assess overall population health metrics and equity patterns across subgroups
- ii) Analyze literature evidence on patient perspectives regarding quality and responsiveness of care
- iii) Examine per capita health expenditure trends and key drivers of cost escalations

Scientific Novelty

This analysis contributes methodologically by applying the established IHI Triple Aim framework to evaluate the healthcare system of a lower-middle income African nation – Ghana. Prior applications have centered on high-income countries like the United States and Western European nations. This paper demonstrates the framework's utility for healthcare systems analysis even in resource-constrained settings through its structured scrutiny of population health metrics, patient perspectives and cost trends. The dimension-based approach enables granular, holistic diagnosis of universal health coverage gaps, quality deficits and priority areas for health financing reforms.



Practical Significance

As Ghana and other sub-Saharan African nations expand investments in their health systems and march towards universal health coverage, structured evaluation mechanisms are vital to inform policies and track progress. This analysis showcases the practical viability of the Triple Aim methodology for systematic health systems assessments and performance measurement in lower-middle income countries through its application in Ghana. The balanced framework simultaneously investigates access, equity, quality and protective care aspects which policymakers can apply to diagnose priority deficiencies in healthcare provision and accordingly channel rehabilitation efforts be it workforce, infrastructure, digital systems or financing.

Analytical Framework

The Triple Aim framework developed by the Institute for Healthcare Improvement (IHI) in the United States has been increasingly employed for health systems analysis across both high-income and lower-middle income country contexts over the past decade (Ryan et al., 2016; Berwick, Nolan & Whittington, 2008). The central benefit conferred is the structured approach to evaluate population health metrics, patient perspectives as well as cost trends and sustainability issues in a holistic manner. As evidenced, Obucina et al. (2018) systematic literature, the Triple Aim lens enables cogent health systems analysis - be it scoping universal health coverage gaps in Ghana as done in this case or even deep-dives into specific clinical areas like patient safety or priority diseases. The model disaggregates performance into critical domains of quality, access, experience and sustainability, facilitating targeted recommendations. As more lower-middle income countries expand healthcare reforms, the framework offers a constructive methodology to systematically evaluate strengths, gaps and progress.

Results and Discussion

The results and discussions have been conducted under the thematic areas of the IHI Triple Aim Framework:

Population Health

Ghana has made steady improvements in population health metrics, seen through rising life expectancies and declining mortality rates. However, progress has been uneven - higher income groups and urban areas achieve better health outcomes (De-Graft Aikins et al., 2012). Rural-urban disparities characterize many health indicators - infant and under-five mortality rates are 1.5 times higher in rural versus urban areas (census, 2021). Such inequities demonstrate uneven access to healthcare.

Ghana's disease burden largely comprises conditions strongly associated with poverty - communicable diseases like malaria and diarrheal diseases constitute over 48% of deaths (WHO, 2018). Social determinants like lack of education, substandard living conditions and malnutrition exacerbate disease



prevalence. For instance, the poorest households have over 3 times the rate of malaria compared to the richest households (Ghana National Malaria Control Program Report, 2016). Improving such population-level social and economic conditions can significantly uplift population health.

Healthcare access is hampered by health worker shortages, especially in remote areas (Agyei-Baffour et al. 2013). Doctor-to-patient and nurse-to-patient ratios are 6-7 times below WHO benchmarks. Rural populations must travel long distances to access medical care, presenting a barrier to seeking services. Strengthening primary health care (PHC) can expand access through community health workers integrated in the system (Awoonor-Williams et al., 2016). Studies in northern Ghana show that PHC interventions raised utilization of facilities from 55% to 85%, increased drug availability by 35%, reduced under-five mortality by 49% in 5 years and lowered neo-natal mortality rates by 45% (Sakeah et al., 2014).

Ghana initiated National Health Insurance Scheme (NHIS) to provide financial risk protection. While it significantly boosted healthcare utilization by removing cost barriers, stratification along socioeconomic lines persists due to lack of affordability. Poorest households have 8 times lower odds of enrollment compared to wealthy households (Kusi et al., 2015). Expanding insurance coverage for poor and vulnerable groups can promote access. Strengthening gate-keeping mechanisms through robust referral systems can improve efficiency and population health through longitudinal and coordinated care.

In summary, Ghana shows patchy improvements in population health outcomes, but progress is hampered by low public health investments - less than 5% GDP, compared to over 8% in countries with similar economies (WHO 2020). Gaps in the social determinants of health underlie unequal health status. Strengthening PHC to alleviate rural shortages, expanding financial and geographic access through pro-poor health policies, augmenting public health spending and addressing wider determinants of health can enable Ghana to substantially uplift the health of its population.

Patient Experience

The Population Health analysis reveals significant inequities in health outcomes and access in Ghana along geographic and socioeconomic lines. These disparities naturally translate into a fractured patient experience depending on the procurement, affordability and availability of care.

Survey data indicates widespread dissatisfaction with long waiting times, availability of medicines, cleanliness and communications with providers in Ghana's public facilities (Alhassan et al., 2016). The poorest segments dependent on public care are thus most affected. For instance, rural mothers delivering in clinics with limited staff and supplies report absence of dignity, emotional support or clear communication from providers (Mills et al., 2014). Such experiences eventually impact health-seeking behaviors.

Financial access also shapes patient experience. Though Ghana's National Health Insurance Scheme (NHIS) has boosted utilization by removing user fees, enrollment is just over 40% with lower rates among poorer



groups (Duku et al., 2016). Out-of-pocket expenditures remain high for medicines, tests and non-insured services. One study found insured patients had 2-3 times higher satisfaction scores for affordability, promptness of care and health worker attitude compared to the uninsured (Nketiah-Amponsah et al., 2012). Hence, expanding insurance to deprived groups could improve their care experience.

Health worker shortages, particularly in remote areas, further undermine patient experience through long waiting times, inadequate attention from doctors and poor quality of care. Low physician density limits clinical interaction time to just about 2 minutes per case in some facilities (Turkson, 2009). Strategies like targeted recruitment, incentives and training to address rural staffing deficits could thus uplift care experiences.

Some case studies demonstrate that quality improvement (QI) methods focused on patient needs and staff capacity building can transform care delivery culture to be more patient-centric. For example, a maternal health project in Ghana applied QI to strengthen clinical systems and staff skills for obstetric emergency care. It recorded substantial jumps in patient satisfaction through better provider communications, reducing waits by 50%, lowering case fatality rates and eliminating neonatal deaths due to limited staff capacity (Marquez et al., 2021).

In summary, while systemic health systems gaps affect patient experiences widely in Ghana, some of the deepest impacts are among marginalized communities. Enhancing financial protection, frontline worker capacity and patient-focused quality improvement initiatives could help deliver more equitable, responsive and satisfactory care. These will also serve to rebuild patient trust which influences service utilization and medical effectiveness.

Cost Reduction

Ghana's per capita health expenditure remains relatively low at US\$78 compared to the global average of US\$1,000 (World Bank, 2019). However, overall health spending is rising rapidly, growing by over 300% in the last 15 years (WHO Global Health Expenditure database). As a share of GDP, healthcare spending has increased from 3.4% in 2000 to 4.4% in 2019. This rate of growth surpasses GDP growth, presenting major cost implications.

Key drivers of the escalating costs include rising utilization of services due to growing population needs and expanding National Health Insurance Scheme (NHIS) coverage. Other factors are shortages of healthcare workers which rely on higher monetary incentives for attraction and retention, operational inefficiencies due to weak infrastructure especially in rural areas, and suboptimal allocation of resources exacerbated by corruption and lack of accountability mechanisms (Asante et al., 2016).

For instance, per capita expenditure on pharmaceuticals grew by over 15 times from 1995 to 2007, largely attributed to inefficient central medical stores, weak forecasting and quantification and uncontrolled



prescriber behavior (Cameron et al., 2009). A review found 50% prescription rates for antibiotics and injections across primary care facilities pointing to huge scope for better regulation (Bosu et al., 2016). Tackling the overuse and misuse of medicines can generate major cost savings.

There is also over-reliance on imported medicines and devices, accounting for over 70% of Ghana's pharmaceutical expenditure (Seiter & Gyansa-Lutterodt, 2009). Promoting local manufacturing through financing instruments and partnerships can improve the trade imbalance for these products. One successful partnership reduced local insulin prices by over 40% within a year by enhancing production capacities (Seiter, 2015).

Another area for efficiency gains is payment reform for providers and strategic purchasing of services by NHIS. Fee-for-service mechanisms through medicines reimbursements incentivize over-prescriptions. Capitation models can contain costs by reducing unnecessary care. The NHIS is moving towards Diagnosis-Related Group (DRG) payments for a number of services and must set optimal rates to ensure quality (Nketiah-Amponsah, 2009). Global budgets or expenditure caps should also be implemented at facility levels along with monitoring.

While tackling operational inefficiencies is crucial, investments in health promotion and primary care can reduce the growing burden of disease treatment in the long-run (Lazar & Davenport, 2018). Studies globally have evidenced the cost-effectiveness of public health interventions focused on risk factors like malnutrition, tobacco use, sanitation etc. as well as expanding access through community health services. Ghana must boost preventative spend from its current rate of 1.7% of total health expenditure (WHO Global Health Expenditure database).

In summary, Ghana requires policy action on multiple fronts - from pricing and procurement reforms, boosting local production, addressing irrational care provision, implementing smart payment mechanisms to increasing health promotion and preventative care to contain the rising costs of its healthcare system. Significant inefficiencies exist which can generate cost savings along with improving health outcomes.

Conclusions

In conclusion, while Ghana has made gradual progress on population health indicators like life expectancy and mortality rates, substantial inequities persist between income and geographic segments. Rural, poorer groups have notably worse access and health outcomes stemming from shortages of health workers, infrastructure and enrollment in financial risk protection schemes.

These gaps in access and affordability also manifest in a deeply fragmented patient experience depending on socioeconomic status. Poorer rural groups face long waits, medication stockouts, poor staff communication and limited dignity in care at under-resourced public facilities. Wealthier urban segments



can access higher quality private facilities. There is an urgent need to advance both financial protection and health worker availability in underserved areas to uplift care experiences.

At the same time, health spending continues to rise rapidly in Ghana, growing faster than its GDP. Key drivers are suboptimal allocation of resources, global medical product dependencies, and lack of cost-containment mechanisms in areas like procurement, payment systems and benefits coverage. Major efficiency gains can be achieved through governance reforms, local production, results-based financing of providers and preventative investments.

In essence, Ghana must tackle considerable inequities in access and disempowering care experiences for poorer rural groups while also addressing rapidly escalating costs that threaten health system sustainability through smart purchasing, prevention and policies that promote accountability. Pursuing integrated people-centered interventions anchored in the IHI Triple Aim framework can help balance the economic, patient and population perspectives for better health outcomes.

Recommendations

Based on the analysis using the IHI Triple Aim framework and the conclusions drawn, below are concrete recommendations for improving Ghana's health system focusing on patient safety and experience:

1. Launch a Rural Health Services Strengthening Program:

- Significant inequities exist between rural and urban communities in Ghana regarding access, outcomes and experiences. A special program needs to be instituted to uplift rural health infrastructure, health worker availability and service quality.
- The key components should include expanding financial incentives and professional growth opportunities to attract and retain more qualified health staff in rural facilities and communities.
- Improving rural facility and equipment maintenance through increased budgetary allocations and public-private partnerships for rural health infrastructure enhancement.
- Deploying community health nurses and workers integrated in the primary health care system to more remote areas to bridge access gaps.
- Ensure regular medical inventory and supply chain audits to prevent stockouts of essential medicines and consumables in rural facilities to improve care quality.

2. Institute a Patient-Centered Quality Improvement Framework:

- Launch quality improvement initiatives across regional and district hospitals focused on uplifting patient experiences especially in high volume departments like obstetrics, general medicine and pediatrics.



- The quality improvement frameworks should measure metrics like wait times, patient-provider communication, facility infection rates, availability of essential resources like medicines and diagnostic tests.
- Improving performance on these metrics through clinical audits, workflow improvements and staff capacity building will translate into enhanced patient safety and experience.

In summary, a two-pronged approach of reducing rural health access inequities and instituting patient-centered quality improvement mechanisms can markedly transform patient safety, quality of care and experience across Ghana's health system.

References

- Arhin, K., Oteng-Abayie, E. F. & Novignon, J. (2023). Cost efficiency of primary health care facilities in Ghana: stochastic frontier analysis. *Discover Health Systems*. 2. <https://doi.org/10.1007/s44250-023-00044-8>.
- Atuoye, K.N., Dixon, J., Rishworth, A., Galaa, S.Z., Boamah, S.A. & Luginaah, I. (2015). Can she make it? Transportation barriers to accessing maternal and child health care services in rural Ghana. *BMC Health Services Research*, 15(1).
- Awoonor-Williams J. K et al. (2016). The Ghana essential health interventions program: a plausibility trial of the impact of health systems strengthening on maternal & child survival. *BMC Health Serv Res*. Aug 29;16 Suppl 7(Suppl 7):637.
- Berwick, D., Nolan, T. & Whittington, J. (2008). The Triple Aim: Care, Health, and Cost. *Health affairs (Project Hope)*. 27. 759-69. <https://doi.org/10.1377/hlthaff.27.3.759>.
- De-Graft Aikins, A., Unwin, N., Agyemang, C., Allotey, P., Campbell, C., & Arhinful, D. (2010). Tackling Africa's chronic disease burden: from the local to the global. *Globalization and health*, 6(1), 1-7.
- Duku, S.K.O., Asenso-Boadi, F., Nketiah-Amponsah, E. *et al*. Utilization of healthcare services and renewal of health insurance membership: evidence of adverse selection in Ghana. *Health Econ Rev* 6, 43 (2016). <https://doi.org/10.1186/s13561-016-0122-6>
- Durairaj, V. & Evans, D. B. (2010). Fiscal space for health in resource-poor countries.. *The World Health Report Background Paper No. 41*.
- Ghana National Malaria Control Program Report (2016). Annual Report 2015. Ghana Health Service. https://ghanahealthservice.org/downloads/GHS_ANNUAL_REPORT_2015_n.pdf
- Ghana Statistical Service. 2021 Population and Housing Census. <https://ghana.unfpa.org/en/news/2021-population-and-housing-census-phc-preliminary-findings-brief>.
- Kumi-Kyereme, A., Darteh, E.K.M., Kofuor, M. (2017). Barriers and motivations for health insurance subscription in Cape Coast, Ghana: A qualitative study. *Archives of Public Health*, 75(1), 13.
- Kusi, A., Enemark, U., Hansen, K.S., & Asante, FA. (2015). Refusal to enroll in Ghana's National Health Insurance Scheme: is affordability the problem?. *International journal for equity in health*, 14(1), 1-14.



- Lazar, M., & Davenport, L. (2018). Barriers to Health Care Access for Low Income Families: A Review of Literature. *Journal of Community Health Nursing*, 35, 28-37. 10.1080/07370016.2018.1404832.
- Novignon, J., Ofori, B., Tabiri, K.G. *et al.* Socioeconomic inequalities in maternal health care utilization in Ghana. *Int J Equity Health* 18, 141 (2019). <https://doi.org/10.1186/s12939-019-1043-x>
- Obucina, M., Harris, N., Fitzgerald, J. A., Chai, A., Radford, K., Ross, A., Carr, L. & Vecchio, N. (2018). The Application of Triple Aim Framework In The Context Of Primary Healthcare: A Systematic Literature Review. *Health Policy*, 122. <https://doi.org/10.1016/j.healthpol.2018.06.006>.
- Ryan, B. L., Brown, J. B., Glazier, R. H., & Hutchison, B. (2016). Examining Primary Healthcare Performance through a Triple Aim Lens. *Healthcare policy = Politiques de sante*, 11(3), 19–31.
- Sakeah, E., McCloskey, L., Bernstein, J., Yeboah-Antwi, K., Mills, S., & Doctor, H. V. (2014). Is there any role for community involvement in the community-based health planning and services skilled delivery program in rural Ghana?. *BMC health services research*, 14(1), 1-9.
- World Health Organization (2018). Ghana country profile. WHO, Geneva.
- World Health Organization (2020). Global Health Expenditure Database. https://apps.who.int/nha/database/country_profile/Index/en.