



## Examination of Patient Safety and Experience in Ghanaian Healthcare Facilities

David Tenkorang-Twum (PhD),<sup>1</sup> Fidelis Atibila (PhD),<sup>2</sup> Philimon Gyapong,<sup>3</sup>

<sup>1</sup>Lecturer, RN, CRA, BSC, MPhil, PhD, FGCNM, School of Nursing and Midwifery, University of Ghana, Ghana.

<sup>2</sup>Senior Lecturer, School of Life and Medical Sciences Centre for Postgraduate Medicine and Public Health, College Lane Campus, University of Hertfordshire, UK

<sup>3</sup>RN, CRA, BSC, MPhil, Unit Head, Certified Registered Anaesthetist, University of Ghana Medical Centre, Legon, Ghana

### Abstract

**Objective:** This paper analyzes Ghana's healthcare quality challenges utilizing the Donabedian model covering structures, processes and outcomes to inform comprehensive systems improvement recommendations.

**Methods:** A mixed methods approach compiles empirical findings from multiple clinical studies across Ghana assessing healthcare infrastructure, service delivery patterns, and resultant patient consequences. Qualitative case reports provide context while quantitative metrics spotlight nationwide deficiencies. An adapted Donabedian framework incorporated expanded quality domains for rigorous evaluation.

**Results:** Significant infrastructure limitations, disjointed processes and alarming patient outcomes signify major quality gaps tied to wider health financing shortfalls. Specific issues include resource distribution inequities, medical supply unreliability, poor referral systems, limited staff accountability and infection control breaches—culminating in high preventable complications.

**Conclusions:** Interdependencies exist between financing, tools, clinical workflows and patient experiences whereby strengthening isolated aspects risks continued quality issues without addressing root causes holistically. Sustainable reforms necessitate coordinated investments in infrastructure, oversight, coordination and worker training.

**Recommendations:** A 10-step roadmap details structural upgrades, delivery protocols and monitoring mechanisms health authorities must institute in tandem to raise care standards for patient welfare and trust.

**Scientific Significance:** This paper advances use of mixed, multi-level modeling to diagnose complex health sector challenges in resource-limited contexts.

**Practical Relevance:** The blueprint formulated provides an evidence-based guide for policymakers to sequentially address identified healthcare deficiencies through coordinated quality assurance initiatives.

**Keywords:** Donabedian model, healthcare quality, patient safety, health systems strengthening, Ghana

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## Introduction & Contextual Statement

Quality healthcare delivery remains integral for population well-being yet achieving consistent, safe and positive care experiences continues escaping many health systems, especially in low resource settings like Ghana. With average life expectancy only 63 years and high infant mortality, Ghana battles preventable deaths from conditions like malaria, lower respiratory infections and diarrheal diseases linked to healthcare access barriers and variable service quality (WHO 2020). Simultaneously patient dissatisfaction looms with nearly three-quarters deeming healthcare services poor per surveys nationwide (Dehnavieh et al 2019).

These trends spotlight need to confront care quality issues systematically. The Donabedian model offers a useful framework for holistic health sector analysis examining interlinked structures, processes and outcomes. Structural components encompass material and human resources, financing schemes and organizational policies forming the foundation to enable quality care provision. Care processes involve clinical diagnosis, treatment and interpersonal domains during consultations. Outcomes reflect metrics capturing patient health status changes, experiences and population indicators.

Prior application studying maternal services (Guta, 2022), district hospital performance (Veillard et al 2005) and infection control (Binder et al., 2021) showcase the model's utility evaluating quality domains and their recursive causality in Ghana and analogous African settings. Yet comprehensive nationwide analysis remains lacking.

Therefore this paper applies an adapted Donabedian model assessing the quality landscape across Ghanaian healthcare facilities to:

- 1) Diagnose root-causes of safety and experience deficiencies
- 2) Elucidate interconnectedness among structural-procedural-outcome limitations
- 3) Inform integrated policy recommendations targeting identified high-impact gaps.

The rich, interwoven insights generated can catalyze more strategic reforms improving both the foundations and frontlines of care to better serve all Ghanaian communities.

## Scientific Contribution

This analysis makes several key scientific contributions to the discourse on evaluating and improving healthcare quality in resource-limited settings:

- 1) It demonstrates the value of conceptually breaking down healthcare performance into interacting components of structures, processes and outcomes for targeted systems analysis.
- 2) It elucidates commonalities in root-causes of quality deficits across LMICs to inform generalized solutions while still noting context-specific cultural and political nuances.
- 3) It compiles wide-ranging empirical evidence from studies across multiple Ghanaian facilities and care areas to underline nation-wide systemic challenges versus isolated issues.



- 4) It expands the Donabedian model to incorporate wider financing policies, access barriers and patient engagement facets integral for comprehensive systems assessments.
- 5) It portrays the complex interlinkages and recursive causal pathways among identified deficiencies using a mixed methods health systems science approach.

## Practical Significance

This analysis bears important practical implications for strengthening Ghana's healthcare sector by:

- 1) Highlighting specific priority focus areas in infrastructure, tools, financing, training and oversight requiring attention from health authorities and policy-makers.
- 2) Emphasizing the need for coordinated quality improvement reforms tackling human resource, procedural and technological limitations simultaneously given their interconnections.
- 3) Formulating a sequential, achievable roadmap for systems upgrades grounded in local evidence tailored to Ghana's specific deficit profile.
- 4) Modeling standardized frameworks health leaders can replicate to diagnose institutional weaknesses and track progress in their respective service domains.
- 5) Detailing proven interventions from other LMIC settings that could be adapted to address Ghana's analogous systems gaps.
- 6) Underscoring the value-add of soliciting frontline patient perspectives and participation to promote patient-centered care advances.

In summary, this paper crystallizes an evidence-based blueprint for health reforms that Ghanaian decision-makers can reference to guide necessary healthcare investments, quality assurance mechanisms and patient experience enhancement strategies in a strategic, impact-oriented manner.

## Analytical Model

The Donabedian model is a conceptual framework used to evaluate the quality of healthcare services. It examines quality of care across three categories: structures, processes, and outcomes. Structures refer to the conditions under which care is delivered, including material resources, human resources, and organizational structure. This includes aspects such as facilities, equipment, operational funding, and the qualifications and organization of healthcare providers. Processes denote the activities involved in giving and receiving care. This includes patients' activities in seeking care and carrying it out, as well as practitioner activities in making diagnoses, recommending or implementing treatments, and monitoring overall progress while, the Outcomes reflect the impact of healthcare on the health status of patients and populations. This includes changes to health status, behavior, knowledge, patient satisfaction, and health-related quality of life.

The Donabedian model is useful for analysis of the healthcare system in Ghana because it provides a framework to systematically assess deficiencies in structures and processes that may be contributing to suboptimal outcomes. By categorizing quality measures into these three components, researchers can trace



connections between systemic resource gaps, weak clinical protocols, and impacts on patient health and safety.

This model will guide analysis through 1) outlining the limitations in healthcare infrastructure, financing, supplies, workforce, etc 2) auditing gaps in clinical flows from prevention to treatment follow-up 3) quantifying impacts on infection rates, morbidity, mortality, patient trust and satisfaction. Comparison can identify which structures and process lapses are most linked to poor outcomes.

The Donabedian model provides a simple, logical framework that can be replicated by other researchers studying healthcare quality and systems in various contexts. It can be used to structure data collection, organize findings thematically, and provide recommendations targeting root-causes of healthcare service delivery deficits. Other applications could examine progress over time or compare facilities based on resources, clinical activity standards, and benchmark outcome measures of performance.

### *Structure/Systemic Factors*

Drawing on recent literature regarding healthcare infrastructure and capacity issues in low- and middle-income countries (LMICs), an analysis of the structural deficiencies hindering quality of care in Ghana would include:

#### Healthcare Financing and Expenditure Gaps

- Per capita health spending significantly lower than peer countries (\$67 vs \$100 regional average) constraining system resources and infrastructure development (WHO, 2019)
- Out-of-pocket payments account for 37% of total health expenditures, deterring care seeking among poor and vulnerable groups (Blanchet et al, 2012)
- Government health spending (5.3% of GDP) falls below Abuja Declaration target of 15%, limiting healthcare investments (ODI, 2016)

#### Infrastructure and Technology

- Rural/urban and regional disparities in health infrastructure identified in case studies, with fewer health facilities and hospital beds per capita outside metropolitan areas (Iddrisu et al., 2023)
- Weak medical supply chain and stock-outs of medications/equipment at facilities across 50% of districts due to limited logistics infrastructure (ibid)
- Lack of affordable testing and imaging equipment lead to extensive diagnostics delays and treatment complications (Kruk, 2018).

#### Workforce Capacity and Training Gaps

- 0.93 physicians and nurses per 1000 population, significantly below WHO minimum threshold of 4.45 (Amporfro et al., 2021)
- Weak domestic health education system contributes to high clinical staffing shortages, necessitating imported Cuban doctors (Abor et al., 2011)



- Significant rural-urban healthcare professional maldistribution persists despite financial incentive programs (Iddrisu et al., 2023)

Taken together, Ghana's healthcare sector suffers from considerable resourcing, staffing and infrastructural constraints reflective of broader healthcare financing inadequacies. Service delivery comparisons show worse availability and readiness of rural facilities to provide quality care. Addressing wider health systems issues regarding budgeting, regional resource allocation and medical personnel development is critical to raising standards of care, improving population health and reducing geographic disparities. A multipronged approach tackling financing, infrastructure and workforce capacity building represents a structurally-attuned path toward strengthening the broader foundations necessary for accessible, safe and high-quality healthcare provision nationwide.

### *Processes:*

Drawing on assessments of clinical care practices and gaps across health facilities in Ghana, this analysis of healthcare processes under the Donabedian model spotlights several key deficiencies:

#### Infection Control and Waste Management

- Limited access to safe water and sanitation in ~17% of facilities hinders regular cleaning and handwashing practices essential for infection control (Dzakpasu et al, 2012)
- 62% of primary care clinics lack protocols for safe storage and disposal of medical waste to minimize contamination risks (Storeng & Palmer, 2019)

#### Clinical Workflow and Referral Coordination

- Absenteeism and shifting roles among overburdened health staff contribute to irregular adherence with patient examination workflows (Amporfro et al., 2021)
- Fragmented communications between clinicians and labs delay test results reaching providers by average of 7 days, obstructing timely diagnoses and treatment (Wondmeh & Mekonnen, 2023)
- No standardized e-Health record-sharing system between care sites impedes oversight of patient transfers between levels of care (Iddrisu et al., 2023)

#### Quality Assurance and Protocol Adherence

- Significant variability in clinicians' knowledge, skills and guideline adherence found across urban and rural sites indicating uneven training and supervision (Hailu et al, 2022)
- No national quality assurance framework exists for monitoring facility audits, clinical outcomes or patient safety metrics (Dehnavieh et al, 2019)
- Low rates of treatment protocol compliance for malaria, tuberculosis and maternal health programs compromises patient outcomes (Hailu et al, 2022)

Taken together, the literature paints a picture of overburdened and undersupported healthcare staff who lack the tools, data feedback loops, oversight and ancillary resources to reliably uphold essential clinical



workflow, coordination, infection control and quality assurance standards integral for safe care delivery. Suboptimal treatment protocol adherence additionally reveals gaps in translating policy into practice. Bolstering healthcare quality necessitates systems reforms addressing wider resource constraints alongside workforce training, performance monitoring, data infrastructure for care continuity and supportive supervision to improve facility-based clinical processes.

## **Outcome:**

Ghana's healthcare delivery deficiencies at both the structural and procedural levels ultimately culminate in poor health outcomes and experiences for patients according to numerous studies. Key impacts spotlighted in the literature include:

### *High Rates of Medical Errors and Adverse Events*

Facilities lacking modern medical equipment coupled with occasional supply stock-outs force clinicians into avoidable errors and oversights. A study across a regional hospital documented an adverse event rate of 43 deaths or permanent disabilities per every 100 surgical cases – widely surpassing rates in high-income nations – linked to infrastructural inadequacies (Aliu et al., 2014).

### *Preventable Infections and Communicable Disease Spread*

Gaps in clinician adherence to hand hygiene and sanitation protocols given high patient loads and water access barriers propagate healthcare-associated infections. Assessments indicate hospital-acquired infection prevalence from 8-19% across district and regional centers (Agyepong et al, 2017). Meanwhile containment efforts for malaria, TB and HIV/AIDS remain hampered by patients lost across disjointed referral networks.

### *Maternal and Child Health Complications*

Though Ghana cut its maternal mortality rate by half from 2005-2017, the rate of 308 deaths per 100,000 births remains high by global standards reflecting substandard labor and delivery care quality (UNICEF, 2019). Meanwhile SOGC estimates indicate over a quarter of newborn deaths stem from largely preventable nursing errors and hypothermia cases tied to resource limitations (Tembo et al., 2017).

### *Patient Dissatisfaction and Mistrust*

Surveys reveal most outpatients rate their hospital experiences as poor or very poor often citing long queues, clinician absenteeism and medicine/scan delays (Dehnavieh et al, 2019). Such disappointing encounters perpetuate distrust in formal healthcare, deterring future care-seeking and feeding into a high self-medication rate of 84% nationally (Tindana et al, 2011).

Ultimately, the downstream impacts of Ghana's structural healthcare constraints and stilted care processes manifest dramatically in preventable disease transmission, medical accidents, inconsistent treatment outcomes and erosion of patient confidence – all of which fuel population health declines. Reversing this trend requires addressing root causes paving the way for high-quality, affordable and reliable healthcare accessible to all Ghanaians to broadly lift community health status. While achievable long-term, this



necessitates major investments and commitment today to fundamentally transform systemic conditions and clinical practices enabling quality care provision.

## Summary and Conclusion

This analysis utilizing the Donabedian model to examine healthcare quality in Ghana demonstrated substantial interdependencies between structural conditions, care processes, and patient health outcomes.

At the most fundamental level, Ghana's wider healthcare financing shortfalls directly restrict facility investments in infrastructure, tools, and staff to uphold robust clinical workflows. These compounding structural deficiencies subsequently disable rigorous infection control, coordinated referrals, continuous monitoring and quality assurance processes known to ensure safe, standardized care. The downstream effects of such resource constraints and procedure lapses then emerge through measurable trends of preventable yet devastating medical errors, outbreak exacerbations and patient complications blatantly apparent across assessments.

Meanwhile, the cascading patient and population health impacts fuel further systems strains. Poor experiences with long wait times, inconsistent service availability and inadequate treatment outcomes perpetuate public distrust and underutilization of formal healthcare. The very institutions intended to improve community health therefore suffer reduced patronage and funding. Allocation attention diverted from strengthening facilities and preventative interventions toward tertiary reactives. This self-reinforcing cycle whereby inadequacies in structures facilitate process breakdowns culminating in bleak health outcomes that then further stress capacity encapsulate the tragic, interwoven shortfalls characterizing the Ghana healthcare landscape at present.

Ultimately the Donabedian model underscores how durable quality care improvements intrinsically require addressing Ghana's health systems limitations at multiple levels in coordination. Stopgap or compartmentalized reforms targeting isolated structures, processes or disease metrics risk pushing problems across categories without capturing wider dynamics enabling high standards of responsive, dignified and clinically-sound care. Resources must build infrastructure where lacking while also fostering procedural consistency, accountability and participatory experiences that collectively elevate patient safety, trust and health security on a national scale. Ghana's aspirations for a robust healthcare sector fulfilling population needs demands tackling this intricate, multi-point agenda holistically.

## Recommendations

Based on the conclusions from this Donabedian model analysis, the following stepped recommendations aim to improve patient safety and experience through integrated quality assurance efforts addressing interlinked healthcare system deficiencies in Ghana:

1. Increase healthcare funding to WHO minimum levels to enable infrastructure upgrades and tools access.



2. Standardize facility infrastructure to international quality standards including reliable lighting, clean water, sanitation and backup power.
3. Procure essential, modern medical equipment and consumables for early diagnostics and treatment across all clinical departments.
4. Establish centralized e-health records and referral tracking system to coordinate care continuity across facilities.
5. Develop national clinical quality guidelines, auditing protocols and adverse event reporting system.
6. Implement compulsory quality supervisor roles at each facility to oversee infrastructure upkeep, audit protocol adherence, and coordinate staff training.
7. Expand and incentivize healthcare education programs to bridge staffing gaps, particularly in nursing.
8. Institute continuous medical education requirements and refreshers for health professionals to update practices.
9. Launch regional healthcare improvement collaboratives to identify and spread solutions addressing persistent service delivery challenges.
10. Create patient experience/safety committees to incorporate first-hand accounts into quality reforms.

Following these steps sequentially based on the Donabedian framework should systematically elevate system structures and tools, care administration processes, and accountability mechanisms – collectively addressing previously documented root-causes of adverse safety events and unsatisfactory patient encounters. Sustained investments guided by this systems approach can help instill consistent, high-quality care with adequate oversight to protect and satisfy all Ghanaians seeking health services.

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