

Strategies for Strengthening Community Health in Sierra Leone: A SWOT–TOWS Matrix Approach

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Abstract: Sierra Leone has expanded community-based primary healthcare (PHC), yet persistent workforce, service-delivery, financing, infrastructure, information-system, and equity constraints continue to affect service capacity and sustainability. This study examined these conditions and developed evidence-informed strategies for strengthening community health and PHC. A scoping review guided by PRISMA-ScR identified peer-reviewed and authoritative grey literature, with 18 studies and reports retained from 65 initially identified records. Evidence was mapped to the six World Health Organization Health System Building Blocks, with equity, community engagement, and resilience incorporated as cross-cutting dimensions, and subsequently analyzed using SWOT and TOWS frameworks. The analysis identified established Community Health Worker and Community Health Officer structures, community-based service platforms, PHC policy commitment, epidemic-response experience, and emerging digital-health capacity as important strengths. Major constraints included workforce shortages and maldistribution, limited workforce absorption and retention, inadequate service readiness, fragmented information systems, financing limitations, and inequitable access. Opportunities included digital integration, geospatial workforce planning, workforce development, integrated epidemic preparedness, and strategic partnerships, while epidemics, health-worker migration, financing pressures, supply-chain disruptions, and environmental risks represented significant threats. TOWS analysis consolidated these findings into six strategic priorities: a sustainable and equitably distributed workforce; strengthened PHC readiness and essential services; integrated digital health and information systems; epidemic-ready and resilient PHC; sustainable financing and coordinated governance; and equity-centered, community-responsive healthcare delivery. The findings demonstrate that sustainable community health improvement in Sierra Leone requires strengthening and integrating existing capacities rather than developing parallel systems and provide an evidence-informed pathway from health-system assessment to strategic planning and implementation.

Keywords: Sierra Leone; community health; primary healthcare; health-system strengthening; SWOT; TOWS; resilience; universal health coverage.

I. INTRODUCTION

Primary healthcare (PHC) remains central to achieving universal health coverage (UHC), reducing health inequities, and improving population health, particularly in low- and middle-income countries where access to hospital-based services is constrained. Community-based health systems extend PHC beyond formal facilities by connecting households and underserved populations with health promotion, disease prevention, surveillance, treatment, referral, and continuity of care. In Sierra Leone, this function is particularly important because geographic disparities, workforce constraints, resource limitations, and continuing communicable and noncommunicable disease burdens create substantial challenges to equitable healthcare access. The Government of Sierra Leone has consequently positioned PHC and UHC as strategic priorities, including efforts to strengthen district health systems, improve stewardship, expand essential services, and scale up a national PHC-UHC model (Ministry of Health and Sanitation [MoHS], 2021). The World Health Organization (WHO, 2025) similarly identifies improved access to quality essential health services, essential medicines and technologies, stronger health workforce capacity, health financing, emergency preparedness, and improved data and governance as continuing priorities for Sierra Leone.

Community-level healthcare is therefore an essential component of Sierra Leone's strategy for reaching populations that may otherwise experience limited access to formal health services. Community Health Workers (CHWs), Community Health Officers (CHOs), Peripheral Health Units, and district-level health structures collectively contribute to prevention (Ishizumi et al., 2021), health promotion, maternal and child health, basic treatment, disease surveillance, referral, and other essential services. Sierra Leone has progressively formalized its community health system through successive national CHW policies, with the 2021–2025 policy seeking to improve the scale, geographic targeting, coordination, implementation, monitoring, and evaluation of the CHW program (Ministry of Health and Sanitation, 2021; Oliphant et al., 2022). Geospatial analysis of Sierra Leone's CHW system has demonstrated the importance of strategically deploying community health personnel according to population distribution, distance from health facilities, and geographic barriers rather than relying solely on uniform population-based allocation (Oliphant et al., 2022). Such evidence underscores that strengthening community health requires attention not only to workforce numbers but also to deployment, accessibility, supervision, integration, and the organization of service delivery.

Despite these foundations, Sierra Leone's community health system continues to operate within significant structural constraints. Health workforce availability, distribution, remuneration, retention, infrastructure, essential medicines, financing, referral capacity, and information systems can influence the ability of frontline services to meet community needs (Wurie, et al. 2018). Workforce challenges are especially consequential. Recent research has documented the paradox of substantial unmet healthcare needs occurring alongside trained but unsalaried health workers who may provide services without formal government employment, highlighting the interaction between workforce availability and fiscal capacity (Pieterse and Saracini (2023)). More broadly, WHO identifies countries with low health-worker density and limited UHC service coverage as particularly vulnerable to workforce shortages and international recruitment pressures (WHO, 2024). At the same time, Sierra Leone faces an evolving epidemiological and health-security environment in which established maternal, child, and infectious-disease priorities increasingly coexist with noncommunicable diseases and the continuing risk of epidemics and other emergencies.

These challenges also coexist with important opportunities for health-system transformation. Sierra Leone's experience responding to major infectious-disease emergencies has generated institutional and community-level knowledge relevant to surveillance, risk communication, emergency preparedness, and resilient service delivery. More recent initiatives have sought to integrate epidemic preparedness directly into PHC so that frontline services can prevent, detect, and respond to outbreaks while maintaining essential health services (Mearns et al., 2025). Digital health and strengthened health-information systems also create opportunities to improve surveillance, referral, workforce supervision, service monitoring, and evidence-informed decision-making. These developments suggest that Sierra Leone's community-health challenges should not be viewed exclusively as deficits. Existing workforce structures, community networks, policy commitments, accumulated emergency-response experience, and emerging technologies represent strategic assets that could be mobilized against persistent weaknesses and emerging external threats.

The coexistence of substantial internal capabilities, persistent system weaknesses, emerging opportunities, and external threats creates a need for a strategic framework capable of examining these factors **relationally rather than independently**. Although conventional SWOT analysis can identify strengths, weaknesses, opportunities, and threats, its descriptive nature provides limited guidance regarding how identified factors should be converted into actionable strategies. The Threats–Opportunities–Weaknesses–Strengths (TOWS) matrix extends SWOT analysis by systematically matching internal and external factors to formulate four types of strategic responses: strength–opportunity (SO), weakness–opportunity (WO), strength–Prisma threat (ST), and weakness–threat (WT) strategies (Weihrich, 1982). This approach is particularly applicable to complex health systems because a single intervention may simultaneously leverage existing capabilities, correct internal limitations, capitalize on external developments, and reduce vulnerability to future shocks.

Accordingly, this study applies an evidence-informed SWOT–TOWS matrix approach to identify and operationalize strategies for strengthening community health in Sierra Leone. The analysis first identifies and codes major internal strengths (S1–Sn) and weaknesses (W1–Wn) and external opportunities (O1–On) and threats (T1–Tn) affecting community health delivery. These factors are subsequently cross-matched—for example, $S1 + S2 \times O1 + O2$ or $W1 + W2 \times T1 + T2$ —to generate traceable SO, WO, ST, and WT strategic alternatives. By explicitly connecting documented health-system conditions to strategic responses, the study seeks to move beyond descriptive assessment toward an actionable framework for workforce development, PHC strengthening, digital transformation, service integration, health security, infrastructure resilience, sustainable financing, and equitable community-level healthcare delivery in Sierra Leone.

Problem Statement

Despite sustained national and international efforts to strengthen primary healthcare, Sierra Leone continues to experience interconnected challenges that constrain effective and equitable community health delivery. These include shortages and geographic maldistribution of health workers, limitations in infrastructure and essential resources, workforce financing and retention challenges, gaps in supervision and referral systems, and weaknesses in health-information capacity (Ministry of Health and Sanitation [MoHS], 2021; Oliphant et al., 2022; Pieterse and Saracini (2023)). These constraints are particularly consequential for rural and underserved populations that depend heavily on community-level services and frontline health workers for access to essential care.

At the same time, the community health system must respond to a changing health environment characterized by persistent communicable and maternal-child health priorities, a growing burden of noncommunicable diseases, risks of future epidemics, and other health-system shocks. Sierra Leone nevertheless possesses important assets, including established community health structures, CHO and CHW capacity, national commitment to PHC and UHC, and substantial experience with community-based surveillance and emergency response. Emerging opportunities in digital health, workforce development, integrated PHC, and health-system resilience further create possibilities for strengthening community-level service delivery (Mearns et al., 2025; WHO, 2025).

The problem, therefore, is not solely the presence of health-system weaknesses but the absence of a sufficiently integrated strategic analysis showing how Sierra Leone can leverage existing community-health strengths and emerging opportunities to address internal weaknesses and mitigate external threats. Existing evidence frequently identifies individual workforce, infrastructure, financing, service-delivery, or health-security challenges, but such factors are often considered separately rather than examined for their strategic interactions. Consequently, identifying health-system problems does not necessarily indicate which combinations of capabilities and environmental conditions should be prioritized for action.

This study addresses this strategic gap by applying an evidence-informed SWOT–TOWS approach to community health in Sierra Leone. The analysis systematically identifies and codes internal strengths and weaknesses and external opportunities and threats and then cross-matches these factors to derive SO, WO, ST, and WT strategies. This approach provides a structured pathway from evidence-based situational diagnosis to prioritized strategic action, with the goal of identifying feasible strategies for strengthening community health delivery, workforce capacity, equity, resilience, and progress toward universal health coverage.

Purpose

The purpose of this study is to systematically assess the internal and external factors influencing community health delivery in Sierra Leone and develop evidence-informed strategies for strengthening the community health system using a SWOT–TOWS matrix approach. Specifically, the study identifies and categorizes key strengths, weaknesses, opportunities, and threats affecting community health and systematically cross-matches these factors to generate strength–opportunity (SO), weakness–opportunity (WO), strength–threat (ST), and weakness–threat (WT) strategies.

Rather than limiting the analysis to a descriptive assessment of health-system conditions, the study operationalizes the TOWS framework by coding individual factors (S1–Sn, W1–Wn, O1–On, and T1–Tn) and examining their strategic interactions. The resulting strategies are intended to identify actionable priorities for strengthening community health workforce capacity, primary healthcare delivery, infrastructure and essential resources, digital health and information systems, integrated service delivery, health-system resilience, sustainable financing, and equitable access to care. Ultimately, the study seeks to provide a structured strategic framework that can inform policy, planning, resource allocation, and community-health system strengthening in Sierra Leone.

Significance of the Study

This study is significant because it moves beyond identifying individual community-health challenges to provide a systematic framework for translating evidence into strategic action. Sierra Leone continues to confront interconnected challenges involving health workforce capacity and distribution, infrastructure, financing, service availability, health-information systems, and vulnerability to health emergencies, while simultaneously pursuing stronger primary healthcare (PHC) and universal health coverage (UHC) (Ministry of Health and Sanitation [MoHS], 2021; Oliphant et al., 2022; World Health Organization [WHO], 2025). Understanding how these conditions interact is essential for developing strategies that are responsive to both existing health-system capacity and emerging population-health needs.

The study has particular significance for health policy and strategic planning. By operationalizing SWOT factors as coded strengths, weaknesses, opportunities, and threats and systematically cross-matching them through the TOWS matrix, the analysis provides a transparent connection between identified health-system conditions and proposed interventions. This approach can assist policymakers and health-system leaders in prioritizing strategies, allocating limited resources, and distinguishing interventions that build on existing capabilities from those required to reduce vulnerabilities. It therefore provides a more actionable approach than identifying health-system deficiencies independently.

The study is also important for community health workforce and PHC development. Community-level health personnel are essential to extending services to geographically underserved populations, yet workforce distribution, supervision, retention, and resource constraints continue to affect service capacity (Oliphant et al., 2022; Pieterse and Saracini (2023)). Identifying strategic combinations involving workforce development, digital support, infrastructure, referral capacity, and community engagement may help strengthen frontline service delivery while supporting more equitable access to care.

Finally, the study contributes to health-system resilience and the strategic-planning literature by demonstrating how the SWOT–TOWS framework can be operationalized within a resource-constrained health system. Sierra Leone's experience with major public-health emergencies highlights the importance of integrating routine PHC with surveillance, preparedness, and continuity of essential services (Mearns et al., 2025). The resulting framework may therefore provide a practical foundation for strengthening community health in Sierra Leone while offering an analytical approach potentially adaptable to other low-resource settings confronting similar workforce, service-delivery, equity, and health-security challenges.

Research Questions

The study is guided by the following research questions:

RQ1. What internal strengths and weaknesses characterize Sierra Leone's community health system?

RQ2. What external opportunities and threats influence the capacity and sustainability of community health delivery in Sierra Leone?

RQ3. How can identified strengths, weaknesses, opportunities, and threats be systematically cross-matched through the TOWS matrix to generate SO, WO, ST, and WT strategies for strengthening community health in Sierra Leone?

RQ4. What strategic priorities emerge from the convergence of the TOWS-derived strategies for strengthening community health workforce capacity, primary healthcare delivery, equity, and health-system resilience in Sierra Leone?

RQ5. How can the prioritized TOWS strategies be translated into actionable policy and implementation priorities for strengthening Sierra Leone's community health system?

Gap in Literature

Although a growing body of literature has examined Sierra Leone's health system, important gaps remain in how the evidence is synthesized and translated into strategic action. Existing studies have documented specific challenges involving health workforce availability and geographic distribution, community health worker deployment, financing, clinical capacity, and health-system resilience (Oliphant et al., 2022; Pieterse and Saracini (2023)). Other research has examined lessons from epidemic preparedness and the integration of emergency readiness with primary healthcare (Mearns et al., 2025). Collectively, this literature provides important evidence about individual components of the community health system but tends to examine these issues separately rather than as interacting elements of a broader strategic environment.

A further gap concerns the translation of identified health-system conditions into explicit and traceable strategic responses. Conventional assessments may identify workforce shortages, infrastructure limitations, financing constraints, digital-health opportunities, community-health assets, or emerging health threats without systematically determining how these factors should interact to guide policy choices. Consequently, the literature provides substantial evidence regarding what challenges and opportunities exist, but less clarity regarding how combinations of internal capabilities and limitations can be strategically matched with external opportunities and threats to generate prioritized actions.

The methodological gap is therefore particularly relevant. Although SWOT analysis is widely used for situational assessment, a descriptive listing of strengths, weaknesses, opportunities, and threats does not by itself establish how those factors should be converted into strategies. The TOWS matrix addresses this limitation by explicitly matching internal and external factors to formulate SO, WO, ST, and WT strategic alternatives (Weihrich, 1982). However, an operationalized SWOT–TOWS analysis in which Sierra Leone's community-health factors are individually coded, systematically cross-

matched, and subsequently consolidated into prioritized health-system strategies remains insufficiently represented in the available literature.

This study addresses these substantive and methodological gaps by integrating recent evidence on Sierra Leone's community health system into a coded SWOT framework and operationalizing the identified factors through TOWS cross-matching. Rather than ending with a descriptive SWOT profile, the analysis establishes a transparent pathway from documented evidence → coded SWOT factors → TOWS combinations → strategic alternatives → consolidated priorities → actionable recommendations. In doing so, the study seeks to contribute an evidence-informed strategic framework for strengthening community health workforce capacity, PHC delivery, equity, resilience, and progress toward UHC in Sierra Leone.

II. CONCEPTUAL FRAMEWORK

This study is guided by an integrated conceptual framework combining the World Health Organization (WHO) Health System Building Blocks framework with SWOT analysis and the TOWS matrix. The WHO framework conceptualizes a functioning health system through six interrelated domains: service delivery, health workforce, health information systems, access to essential medicines and technologies, health financing, and leadership/governance (World Health Organization [WHO], 2007, 2010). These domains provide the structural foundation for examining the capacity and functioning of Sierra Leone's community health system. Because community health extends beyond formal health-system structures, equity, community engagement, and health-system resilience are incorporated as cross-cutting dimensions influencing all six domains.

The WHO framework establishes what components of the community health system are examined, whereas SWOT and TOWS provide the mechanisms for determining what the evidence means strategically and how it can inform action. Evidence related to each health-system domain is reviewed and classified as an internal strength (S), internal weakness (W), external opportunity (O), or external threat (T). Each identified factor is assigned a unique code [S1–Sn, W1–Wn, O1–On, or T1–Tn] to maintain traceability between the underlying evidence, SWOT classification, and subsequent strategic analysis.

As illustrated in Figure 1, the framework follows a sequential but iterative pathway from health-system assessment to strategic action. The six WHO Health System Building Blocks constitute the initial analytical domains. Evidence within and across these domains is then assessed and coded according to the SWOT categories. The coded factors subsequently enter the TOWS matrix, where internal and external conditions are systematically cross-matched to generate four strategic alternatives: SO strategies, which use strengths to capitalize on opportunities; WO strategies, which use opportunities to overcome weaknesses; ST strategies, which use strengths to mitigate threats; and WT strategies, which minimize weaknesses and reduce exposure to threats (Wehrich, 1982).

Figure 1.

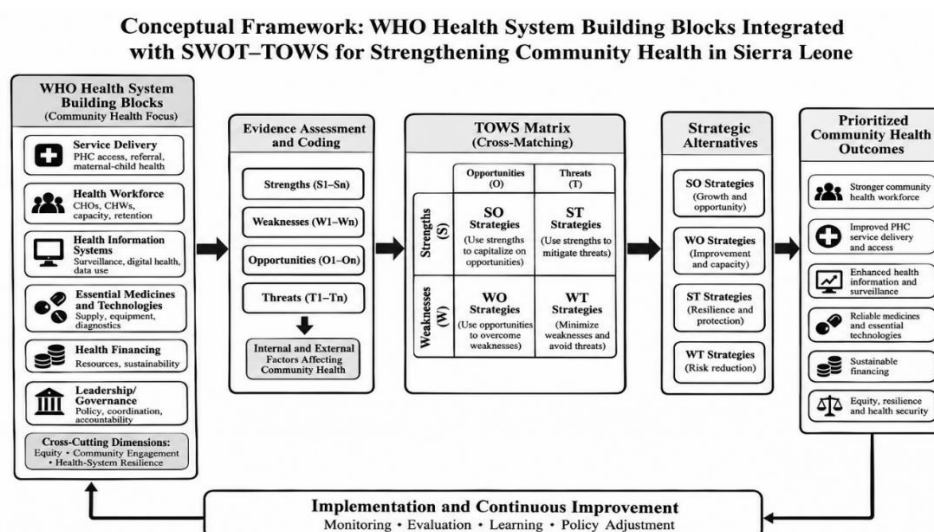


Figure 1. Conceptual framework integrating the WHO Health System Building Blocks with SWOT and the TOWS matrix for community health system strengthening in Sierra Leone.

The central feature of Figure 1 is the explicit linkage between health-system evidence and strategy formulation. For example, evidence concerning workforce availability, distribution, supervision, and retention is first situated within the health workforce building block and subsequently classified according to whether the condition represents a strength, weakness, opportunity, or threat. A documented workforce weakness (e.g., W1) may then be cross-matched with a relevant external opportunity (e.g., O2) to generate a WO strategy, whereas an existing workforce strength (e.g., S2) may be matched with an external threat (e.g., T3) to formulate an ST strategy. The same analytical process is applied across service delivery, information systems, medicines and technologies, financing, and leadership/governance. This coding and cross-matching process provides an audit trail from evidence to strategic recommendation, reducing the likelihood that strategies are generated independently of the documented health-system conditions.

The strategic alternatives generated through TOWS are subsequently examined for convergence and prioritization. Related SO, WO, ST, and WT strategies are consolidated into higher-order priorities addressing areas such as community health workforce strengthening, PHC service delivery and access, health information and surveillance, medicines and technologies, sustainable financing, governance, equity, resilience, and health security. Thus, the framework does not assume that every TOWS combination constitutes an independent policy priority; rather, related strategies are synthesized to identify interventions with broader system-level relevance.

Finally, the feedback pathway depicted in Figure 1 emphasizes that community health system strengthening is iterative rather than linear. Strategic priorities proceed to implementation, monitoring, evaluation, learning, and policy adjustment. Findings from implementation are subsequently fed back into the health-system assessment process, allowing changes in strengths, weaknesses, opportunities, and threats to be reassessed over time. The framework therefore establishes the analytical pathway for this study as:

WHO Health System Domains → Evidence Assessment and Coding → SWOT Classification → TOWS Cross-Matching → Strategic Alternatives → Prioritized Community Health Outcomes → Implementation, Evaluation, and Continuous Improvement.

Through this integration, the WHO framework provides the health-system architecture, SWOT provides the situational diagnosis, and TOWS provides the strategy-generation mechanism. Together, they offer a structured approach for moving from evidence about Sierra Leone's community health system to actionable and adaptive strategies for strengthening PHC, equity, UHC, and health-system resilience.

III. METHODOLOGY

Study Design

This study employed an evidence-informed strategic health systems analysis incorporating a scoping review and SWOT-TOWS analysis to develop strategies for strengthening community health in Sierra Leone. The evidence-review component was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). PRISMA-ScR was selected because the study sought to map and synthesize a heterogeneous body of evidence concerning community health rather than estimate the effect of a single intervention. The PRISMA-ScR framework provides guidance for reporting eligibility criteria, information sources, search strategies, evidence selection, data charting, and synthesis.

The analytical process was further structured using the WHO Health System Building Blocks framework, comprising service delivery, health workforce, health information systems, access to essential medicines and technologies, health financing, and leadership/governance (World Health Organization [WHO], 2007, 2010). Equity, community engagement, and health-system resilience were incorporated as cross-cutting dimensions. Evidence identified through the scoping review was mapped to these domains, classified through SWOT analysis, and subsequently cross-matched using the TOWS matrix to generate strategic alternatives.

Literature Search Strategy

A structured literature search was conducted across PubMed/MEDLINE, Scopus, Web of Science, CINAHL, and Google Scholar and supplemented by targeted searches of authoritative grey-literature sources, including the Sierra Leone Ministry of Health, World Health Organization (WHO), World Bank, UNICEF, and other relevant national and international organizations. The search focused primarily on literature published between 2015 and 2026, while older seminal policy, theoretical, framework, and methodological sources were retained where necessary to provide historical or conceptual context.

Search terms combined Sierra Leone with concepts related to community health, primary healthcare (PHC), and broader health-system functions. The core search strategy was:

("Sierra Leone") AND ("community health" OR "primary health care" OR "primary healthcare" OR "Community Health Officer" OR "community health worker") AND ("health workforce" OR "service delivery" OR "health information system" OR "digital health" OR "essential medicine*" OR "health financing" OR governance OR leadership OR equity OR "health system resilience" OR surveillance OR "universal health coverage")***

Additional targeted searches were conducted to identify evidence concerning maternal and child health, noncommunicable diseases (NCDs), infectious diseases, health workforce migration and retention, health security, supply chains, rural healthcare, climate-related health risks, and other relevant issues identified during evidence mapping. Search terms were adapted to accommodate the indexing conventions and search functions of individual databases.

Eligibility Criteria

Sources were eligible for inclusion if they (a) reported evidence specific to Sierra Leone; (b) addressed community health, PHC, or health-system conditions affecting community-level healthcare and service delivery; and (c) provided sufficient information for evidence extraction, health-system analysis, and subsequent SWOT analysis.

Eligible evidence included peer-reviewed quantitative, qualitative, mixed-methods, implementation, and health-systems studies, as well as relevant government policies, strategic plans, surveillance reports, and publications from recognized national and international organizations. Grey literature was included because important evidence concerning Sierra Leone's workforce, financing, governance, infrastructure, service delivery, and national health priorities may not be adequately represented in peer-reviewed publications.

Sources were excluded if they (a) did not contain identifiable Sierra Leone-specific evidence; (b) were unrelated to community health, PHC, or relevant health-system conditions; (c) contained insufficient information for extraction and analysis; (d) lacked adequate methodological or institutional credibility; or (e) duplicated evidence available in a more complete source.

Search Documentation and Reproducibility

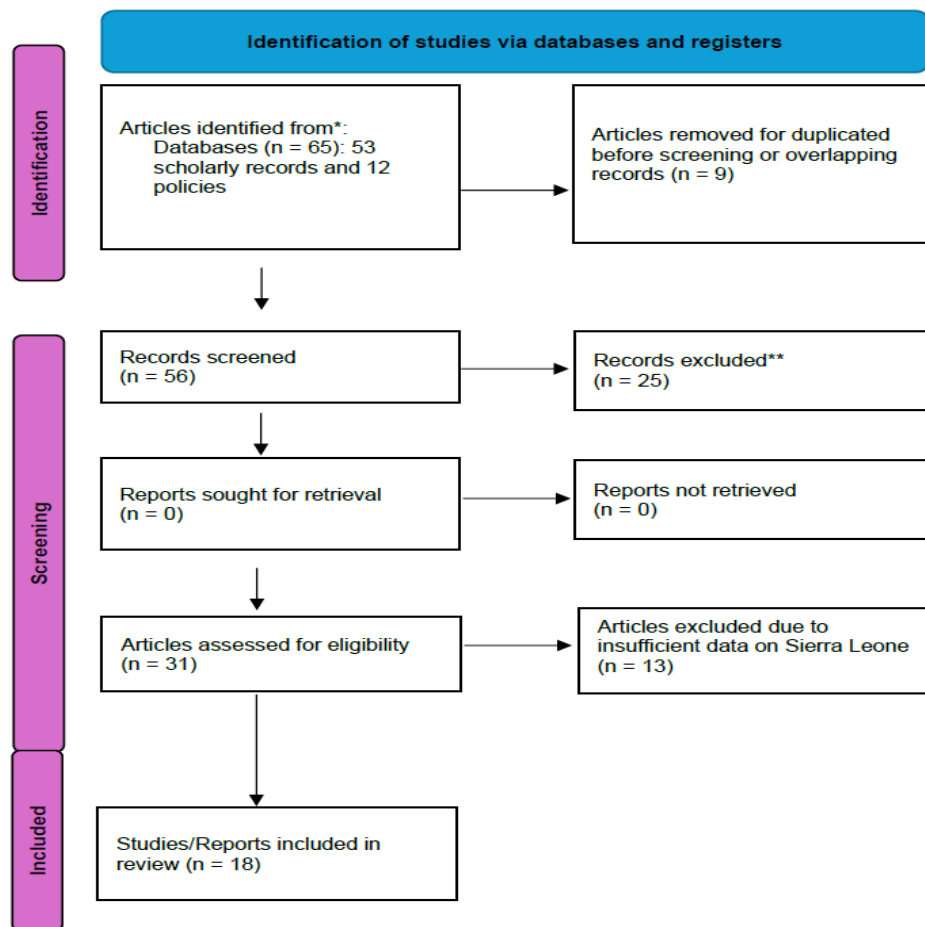
The complete electronic search strategy for at least one database was documented for inclusion in the article or supplementary materials to permit replication. Search procedures and reporting were guided by PRISMA-ScR (Tricco et al., 2018), with additional consideration given to PRISMA-S recommendations for transparent and reproducible literature searching (Rethlefsen et al., 2021). The databases and other information sources searched, the date of the final search, and the electronic search procedures were documented. The complete search strategy for at least one database was retained for reporting in the article or supplementary materials to facilitate replication.

Study Selection and Evidence Synthesis

Records identified through database and grey-literature searches were screened using the predefined eligibility criteria. Following duplicate removal, titles and abstracts were screened for relevance, potentially eligible reports were retrieved for full-text assessment, and sources meeting the inclusion criteria were retained for evidence synthesis.

The search identified 65 records, comprising 53 scholarly records and 12 policy-related documents. Following removal of nine duplicate or overlapping records, 56 records remained for screening. Of these, 25 were excluded because they did not meet the eligibility criteria, leaving 31 reports for full-text assessment. All 31 reports were successfully retrieved. Following full-text review, 13 reports were excluded because they contained insufficient Sierra Leone-specific evidence relevant to the scope of the review. Consequently, 18 studies and reports met the eligibility criteria and were included in the final evidence synthesis. The identification, screening, eligibility assessment, and inclusion process is presented in Figure 2.

Following study selection, evidence from the 18 included sources was charted and mapped to the six WHO Health System Building Blocks: service delivery, health workforce, health information systems, access to essential medicines and technologies, health financing, and leadership/governance (World Health Organization [WHO], 2007, 2010). Equity, community engagement, and health-system resilience were incorporated as cross-cutting dimensions. This process provided a structured basis for organizing heterogeneous evidence and identifying the health-system conditions subsequently examined through SWOT analysis.

Figure 2. PRISMA-ScR Flow Diagram of Evidence Identification, Screening, Eligibility, and Inclusion for the Analysis of Community Health in Sierra Leone.

Evidence Synthesis and SWOT Classification

Following study selection, evidence from included sources was charted and mapped to the six WHO Health System Building Blocks: service delivery, health workforce, health information systems, access to essential medicines and technologies, health financing, and leadership/governance (World Health Organization [WHO], 2007, 2010). Equity, community engagement, and resilience were treated as cross-cutting dimensions. This mapping provided a systematic mechanism for organizing heterogeneous evidence before its classification within the SWOT framework.

The evidence identified several recurring community-health system conditions. Research on CHW deployment demonstrated the importance of Sierra Leone's established community workforce for extending geographic access while also identifying persistent inequalities and inefficiencies in workforce distribution, particularly among hard-to-reach populations (Oliphant et al., 2022). Evidence concerning PHC organization similarly demonstrated the importance of CHOs and community-level facilities to frontline service delivery while identifying workforce shortages and geographic maldistribution as continuing constraints (Robinson, 2019). These findings provided evidence for simultaneously recognizing existing workforce and service-delivery strengths and persistent distributional weaknesses.

Other evidence highlighted limitations in facility readiness, diagnostics, equipment, supplies, financing, and health-information capacity, while developments in digital health and electronic surveillance suggested opportunities for strengthening information management, surveillance, referral, and decision-making (Koroma et al., 2022). Studies examining Sierra Leone's experience with Ebola further demonstrated the vulnerability of essential health services during major emergencies while highlighting the importance of surveillance, community engagement, preparedness, and resilient PHC systems (Sochas et al., 2017). More recent work supports greater integration of epidemic preparedness into routine PHC rather than maintaining preparedness as a separate emergency function (Mearns et al., 2025).

The evidence indicates that Sierra Leone's community health system contains both established assets and persistent structural constraints, while operating within an external environment that presents both opportunities for strengthening and threats to sustainability. The literature therefore served not merely as contextual background but as the evidentiary basis for the SWOT classification. For purposes of the analysis, strengths and weaknesses were defined as favorable and unfavorable conditions within the community health and PHC system, whereas opportunities and threats represented favorable and unfavorable conditions arising primarily from the broader policy, socioeconomic, technological, environmental, and global health environment. Each factor retained from the evidence synthesis was assigned an identifier: [S1–Sn, W1–Wn, O1–On, or T1–Tn] to maintain traceability between the evidence base, SWOT classification, and subsequent strategic analysis.

Table 1. Evidence Mapping From the Scoping Review to the SWOT Analysis of Sierra Leone's Community Health System

Evidence identified from the literature	WHO domain/cross-cutting dimension	Strategic interpretation	SWOT code
STRENGTHS			
Established national CHW network extending community-level services and geographic access, including hard-to-reach populations (Oliphant et al., 2022)	Health workforce; service delivery; equity	Existing community-based delivery capacity	S1
Established CHO and Peripheral Health Unit structures supporting frontline PHC delivery	Health workforce; service delivery	Existing institutional and workforce capacity	S2
National policy commitment to strengthening PHC, community health, and progress toward UHC (MoHS, 2021)	Leadership/governance; service delivery	Favorable domestic policy and institutional foundation	S3
Existing community participation and community-based approaches supporting health promotion, surveillance, referral, and service uptake	Community engagement; service delivery; equity	Established community-level platform for health-system engagement	S4
Experience gained from Ebola and subsequent public-health emergencies has strengthened knowledge of surveillance, community engagement, preparedness, and emergency response (Sochas et al., 2017; Mearns et al., 2025)	Health information systems; resilience; governance	Accumulated institutional and community emergency-response capability	S5
Existing digital and electronic health-information initiatives provide a foundation for surveillance, reporting, and health-system decision-making (Koroma et al., 2022)	Health information systems	Existing technological and information-system capacity	S6
WEAKNESSES			
Persistent geographic maldistribution of CHWs and other frontline health personnel limits equitable access, particularly in rural and hard-to-reach communities (Oliphant et al., 2022)	Health workforce; equity	Internal workforce distribution constraint	W1
Health workforce shortages and insufficient capacity continue to constrain community and PHC service delivery	Health workforce; service delivery	Internal workforce capacity limitation	W2
Trained but unsalaried health workers and limited fiscal capacity weaken workforce absorption, motivation, and sustainability (Pieterse and Saracini (2023))	Health workforce; health financing	Internal workforce financing and employment constraint	W3
Limitations in facility readiness, infrastructure, diagnostics, equipment, and essential supplies constrain frontline service capacity	Service delivery; medicines and technologies	Internal service-readiness limitation	W4

Weaknesses in supply availability and procurement/distribution systems can reduce reliable access to essential medicines, diagnostics, and technologies	Medicines and technologies; service delivery	Internal supply-system constraint	W5
Fragmentation and limitations in health-information systems reduce interoperability, data use, referral coordination, and timely decision-making	Health information systems; governance	Internal information and coordination weakness	W6
Financing constraints and reliance on limited public resources restrict the capacity to sustain and expand community-level services	Health financing; governance	Internal fiscal and sustainability constraint	W7
Gaps in supervision, referral capacity, and integration across community, facility, and district levels can weaken continuity and quality of care	Service delivery; health workforce; governance	Internal coordination and quality constraint	W8
Persistent rural and geographic inequalities in access indicate that expansion of services has not eliminated disparities in community-level healthcare	Equity; service delivery	Internal equity and access constraint	W9
OPPORTUNITIES			
Expansion and integration of digital health technologies can strengthen surveillance, reporting, referral, supervision, and evidence-informed decision-making (Koroma et al., 2022)	Health information systems; service delivery	Opportunity for digital transformation and system integration	O1
Integration of epidemic preparedness and health security into routine PHC can strengthen early detection, response, and continuity of essential services (Mearns et al., 2025)	Service delivery; resilience; health information systems	Opportunity to institutionalize epidemic-ready PHC	O2
Geospatial and population-based planning can improve targeting and deployment of CHWs and other community health resources (Oliphant et al., 2022)	Health workforce; equity; health information systems	Opportunity for evidence-informed workforce allocation	O3
National and international partnerships can support workforce development, infrastructure, technology, financing, training, and health-system strengthening	Governance; financing; health workforce	Opportunity to mobilize technical and financial resources	O4
Greater integration of community health services with maternal-child health, infectious-disease services, NCD care, prevention, and health promotion can broaden the contribution of PHC	Service delivery; community engagement	Opportunity for integrated, life-course community healthcare	O5
Strengthened training, mentorship, supportive supervision, and continuous quality-improvement systems can enhance CHW/CHO competencies and frontline service quality	Health workforce; service delivery	Opportunity for workforce and quality development	O6
Continued national and global emphasis on UHC, health equity, resilient PHC, and community-based healthcare creates a supportive policy environment for system strengthening	Leadership/governance; equity; resilience	Opportunity for policy alignment and sustained reform	O7
THREATS			
Future epidemics, emerging infectious diseases, and other public-health emergencies may overwhelm community and PHC capacity	Resilience; service delivery	External health-security threat	T1
Major health emergencies can disrupt maternal, child, preventive, and other essential health services (Sochas et al., 2017)	Service delivery; resilience	External threat to service continuity	T2

International migration and competition for skilled health personnel may further reduce the availability of trained health workers	Health workforce	External workforce-retention threat	T3
Economic and fiscal pressures may constrain government capacity to finance workforce expansion, infrastructure, medicines, and community health programs	Health governance	financing; External macroeconomic threat to sustainability	T4
Dependence on external funding and changing donor priorities may expose community health programs to financing instability	Health governance	financing; External financing vulnerability	T5
Global and regional supply-chain disruptions may affect the availability and cost of medicines, diagnostics, equipment, and other essential technologies	Medicines and technologies; delivery	service External supply-chain threat	T6
Climate-related events and environmental pressures may increase disease risks, disrupt access, and place additional demands on vulnerable community health services	Resilience; service delivery; equity	Emerging environmental and health-system threat	T7
Persistent poverty, geographic barriers, and other socioeconomic inequalities may continue to restrict healthcare access and worsen disparities among vulnerable populations	Equity; service delivery	External socioeconomic threat to equitable access	T8

Note. Factors presented in the table were derived from evidence identified through the scoping review and classified according to their strategic relationship to Sierra Leone's community health system. Strengths and weaknesses represent favorable and unfavorable conditions primarily within the community health and PHC system, whereas opportunities and threats represent favorable and unfavorable conditions arising primarily from the broader policy, technological, socioeconomic, environmental, financing, and global health environment. S = strength; W = weakness; O = opportunity; T = threat; PHC = primary healthcare; CHW = community health worker; CHO = community health officer; UHC = universal health coverage.

Interpretation of the SWOT Findings

As summarized in Table 1, the SWOT analysis depicts Sierra Leone's community health system as having an established foundation for primary healthcare delivery while continuing to face substantial structural and operational constraints. Key strengths include the established CHW and CHO workforce structures, national commitment to PHC and UHC, community-based service platforms, experience with surveillance and epidemic response, and an emerging foundation for digital health and health-information systems. Together, these assets demonstrate that community health strengthening in Sierra Leone can build upon existing workforce, institutional, policy, community, and technological capacities rather than requiring the creation of an entirely new delivery system.

These strengths coexist with important internal weaknesses. Geographic maldistribution and shortages of health personnel, limited absorption and remuneration of trained workers, inadequate facility and diagnostic readiness, weaknesses in essential medicines and supply systems, fragmented health-information systems, financing limitations, gaps in supervision and referral, and persistent inequities in access constrain the reach, quality, and sustainability of community-level services (Last Mile Health. (2025b). The findings therefore suggest that expansion of community health coverage alone may be insufficient unless accompanied by improvements in workforce sustainability, service readiness, system integration, financing, and equitable resource distribution.

The external environment similarly presents both opportunities and risks. Opportunities include digital-health expansion, geospatial workforce planning, integration of epidemic preparedness into routine PHC, strengthened workforce training and mentorship (Last Mile Health. (2022a), broader integration of community-based services, strategic partnerships, and continued national and international emphasis on UHC and resilient PHC. Conversely, future epidemics, disruption of essential services during emergencies, health-worker migration, fiscal pressures, instability in external financing, supply-chain disruptions, climate-related pressures, and persistent socioeconomic barriers may exacerbate existing system weaknesses.

Taken together, the findings indicate that the strategic value of the SWOT analysis lies not in considering strengths, weaknesses, opportunities, and threats separately, but in examining how they interact. Existing strengths may be used to capitalize on emerging opportunities or protect the health system against external threats, while available opportunities may help address internal weaknesses. Conversely, the convergence of internal weaknesses and external threats identifies areas of heightened vulnerability requiring protective or risk-reduction strategies. Accordingly, the coded SWOT factors were subsequently cross-matched through the TOWS matrix to generate Maxi-Maxi (S-O), Maxi-Mini (S-T), Mini-Maxi (W-O), and Mini-Mini (W-T) strategies for strengthening community health in Sierra Leone.

TOWS Strategic Analysis

Building on the evidence-derived SWOT findings, the TOWS matrix was used to systematically cross-match internal and external factors and generate strategic alternatives for strengthening community health in Sierra Leone. Four strategic orientations were examined: Maxi-Maxi (S-O) strategies, which use existing strengths to capitalize on external opportunities; Maxi-Mini (S-T) strategies, which use strengths to mitigate external threats; Mini-Maxi (W-O) strategies, which use available opportunities to address internal weaknesses; and Mini-Mini (W-T) strategies, which seek to reduce internal weaknesses while limiting exposure to external threats. Cross-matching was based on meaningful strategic relationships among the coded factors rather than mechanically pairing every possible SWOT combination. This process maintained traceability from the scoping-review evidence and SWOT classification to the resulting strategic alternatives.

Table 2. TOWS Matrix for Strengthening Community Health in Sierra Leone

Strategic orientation	SWOT factors cross-matched	TOWS-derived strategy
Maxi-Maxi (SO1)	$S1 + S2 + S6 \times O1$	Use the established CHW/CHO network and existing digital-health foundation to expand digitally enabled community surveillance, referral, supportive supervision, reporting, and continuity of care.
Maxi-Maxi (SO2)	$S1 + S3 \times O3$	Combine established community-health structures and national PHC/UHC commitment with geospatial planning to improve equitable deployment of community health personnel and resources, particularly in underserved areas.
Maxi-Maxi (SO3)	$S5 \times O2$	Build on Sierra Leone's accumulated epidemic-response experience to integrate surveillance, preparedness, early detection, and continuity planning into routine PHC.
Maxi-Maxi (SO4)	$S1 + S2 + S4 \times O5 + O6$	Use established community-health personnel and community-engagement structures to expand integrated services while strengthening training, mentorship, and continuous quality improvement.
Maxi-Mini (ST1)	$S1 + S2 + S5 \times T1 + T2$	Mobilize established community-health personnel and emergency-response capacity to maintain essential community and PHC services during epidemics and other major health emergencies.
Maxi-Mini (ST2)	$S3 \times T4 + T5$	Use national commitment to PHC and UHC to strengthen domestic planning, resource mobilization, and financing mechanisms that reduce vulnerability to fiscal pressures and changes in external funding.
Maxi-Mini (ST3)	$S5 + S6 \times T1 + T7$	Combine emergency-response experience with health-information and digital capabilities to strengthen early warning, surveillance, risk assessment, and response to epidemic and climate-related health threats.
Maxi-Mini (ST4)	$S1 + S4 \times T8$	Use community-health networks and community engagement to identify underserved populations, reduce barriers to care, and limit the effects of socioeconomic inequalities on healthcare access.
Mini-Maxi (WO1)	$W1 + W2 \times O3 + O6$	Use geospatial workforce planning, targeted training, mentorship, and supportive supervision to improve

		workforce distribution, capacity, and coverage in underserved communities.
Mini-Maxi (WO2)	$W6 \times O1$	Use digital-health expansion to improve interoperability, reporting, referral coordination, surveillance, and data-informed decision-making across community, facility, and district levels.
Mini-Maxi (WO3)	$W8 \times O1 + O6$	Combine digital tools with strengthened mentorship and supervision systems to improve referral, communication, continuity of care, and quality assurance between community and facility levels.
Mini-Maxi (WO4)	$W4 + W5 \times O4 + O7$	Leverage strategic partnerships and the broader policy emphasis on resilient PHC and UHC to strengthen facility readiness, diagnostics, equipment, essential medicines, and supply systems.
Mini-Maxi (WO5)	$W9 \times O3 + O5$	Use geospatial planning and integrated community-based services to target populations experiencing persistent geographic and service-access disparities.
Mini-Mini (WT1)	$W2 + W3 \times T3 + T4$	Strengthen workforce absorption, remuneration, career development, working conditions, and retention mechanisms to reduce workforce losses associated with migration and fiscal constraints.
Mini-Mini (WT2)	$W4 + W5 \times T2 + T6$	Strengthen PHC readiness, procurement, inventory management, emergency stocks, and supply-chain resilience to protect essential services during emergencies and external supply disruptions.
Mini-Mini (WT3)	$W7 \times T4 + T5$	Strengthen domestic health financing, budgeting, prioritization, and coordinated resource allocation to reduce vulnerability to economic pressures and unstable external financing.
Mini-Mini (WT4)	$W8 \times T1 + T2$	Strengthen referral systems, supervision, contingency planning, and coordination across community, facility, and district levels to reduce service disruption during public-health emergencies.
Mini-Mini (WT5)	$W9 \times T7 + T8$	Prioritize vulnerable, rural, and hard-to-reach populations in service planning and resource allocation to prevent environmental and socioeconomic pressures from widening existing health inequities.

Note. TOWS strategies were generated by cross-matching strategically related factors identified in the evidence-derived SWOT analysis. SO = strength–opportunity (Maxi–Maxi); ST = strength–threat (Maxi–Mini); WO = weakness–opportunity (Mini–Maxi); WT = weakness–threat (Mini–Mini); PHC = primary healthcare; CHW = community health worker; CHO = community health officer; UHC = universal health coverage. Factor codes correspond to those reported in Table 1.

Strategic Priorities Emerging From the TOWS Analysis

The TOWS analysis generated strategic alternatives across the Maxi–Maxi (SO), Maxi–Mini (ST), Mini–Maxi (WO), and Mini–Mini (WT) orientations. Although these strategies represent different combinations of internal and external factors, examination across the four orientations revealed substantial convergence around several recurring health-system needs. Rather than treating each TOWS-derived strategy as an independent intervention, related strategies were therefore consolidated into higher-order priorities according to their common objectives, affected health-system domains, and potential contribution to sustainable community health strengthening.

Six strategic priorities emerged from this synthesis: (1) development and equitable distribution of a sustainable community health workforce; (2) strengthening PHC readiness and essential service capacity; (3) development of an integrated digital health and information system; (4) institutionalization of epidemic-ready and resilient PHC; (5) strengthening sustainable financing and coordinated governance; and (6) advancing equity-centered and community-responsive healthcare delivery.

These priorities represent areas in which multiple TOWS strategies converge and therefore provide a more focused basis for policy and implementation planning.

Table 3. Strategic Priorities Emerging From the TOWS Analysis

Strategic priority	Converging TOWS strategies	Principal strategic focus	Expected contribution	system-level
P1. Sustainable and equitably distributed community health workforce	SO2, WO1, SO4, WT1	Improve geographic deployment, workforce absorption, remuneration, retention, training, mentorship, supportive supervision, and career development for CHWs, CHOs, and other frontline personnel.	More equitable availability, improved retention, stronger competencies, and greater continuity of community-level services.	workforce improved
P2. PHC readiness and essential service capacity	SO4, WO3, WO4, WT2, WT4	Strengthen facility readiness, diagnostics, essential medicines, equipment, referral systems, supportive supervision, supply-chain capacity, and continuity of care.	Improved quality, reliability, accessibility, and continuity of essential PHC services.	
P3. Integrated digital health and information systems	SO1, ST3, WO2, WO3	Strengthen interoperability, community-level reporting, digital referral, surveillance, workforce supervision, early warning, and use of routine data for decision-making.	Better information flow, surveillance, coordination, referral, accountability, and evidence-informed management.	
P4. Epidemic-ready and resilient PHC	SO3, ST3, ST1, WT2, WT4	Integrate surveillance, preparedness, infection prevention, emergency planning, supply resilience, referral, and continuity of essential services into routine PHC.	Greater capacity to detect and respond to health emergencies without substantially disrupting routine community and PHC services.	
P5. Sustainable financing and coordinated governance	ST2, WO4, WT1, WT3	Strengthen domestic resource mobilization, workforce financing, budgeting, partner coordination, accountability, and strategic allocation of limited resources.	Reduced financing vulnerability, improved resource alignment, stronger institutional sustainability, and greater domestic ownership.	
P6. Equity-centered and community-responsive healthcare delivery	SO2, ST4, WO1, WO5, WT5	Use geospatial evidence, community engagement, targeted resource allocation, and integrated service delivery to prioritize rural, hard-to-reach, and socioeconomically vulnerable populations.	Reduced geographic and socioeconomic disparities and improved equitable access to community and PHC services.	

Note. Strategic priorities were derived by consolidating TOWS strategies with overlapping objectives and health-system implications. P = strategic priority; SO = strength–opportunity; ST = strength–threat; WO = weakness–opportunity; WT = weakness–threat; PHC = primary healthcare; CHW = community health worker; CHO = community health officer.

Interpretation of the Strategic Priorities

The convergence of TOWS strategies indicates that strengthening community health in Sierra Leone requires a systems approach rather than isolated interventions. Workforce strengthening is central but must be accompanied by equitable deployment, absorption, supervision, support, and retention. PHC readiness similarly depends on reliable diagnostics, medicines, equipment, referral systems, and supplies, while digital health should support surveillance, referral, workforce management, and decision-making rather than function as a stand-alone intervention.

Resilience should also be integrated into routine PHC by embedding surveillance, preparedness, infection prevention, referral, supply continuity, and emergency planning within community health services. Across these priorities, sustainable financing, coordinated governance, and equity are essential. Implementation should therefore ensure that system improvements reach rural, hard-to-reach, and vulnerable populations while strengthening overall PHC capacity.

Table 4. Policy and Implementation Framework for Strengthening Community Health in Sierra Leone

Strategic priority	Priority policy and implementation actions	Principal actors	Implementation horizon	Illustrative monitoring indicators
P1. Sustainable and equitably distributed community health workforce	Use population need, geography, and service-access data to guide CHW/CHO deployment; strengthen mechanisms for absorbing qualified personnel into the workforce; improve remuneration and retention approaches; establish structured supportive supervision, mentorship, continuing professional development, and career pathways; prioritize incentives and support for hard-to-reach areas.	Ministry of Health; district health management teams; training institutions; local authorities; development partners	Short–medium term; continuous workforce monitoring	CHW/CHO coverage by district; proportion of underserved communities meeting staffing targets; vacancy rate; workforce retention; proportion receiving scheduled supervision/mentorship; training completion
P2. PHC readiness and essential service capacity	Assess and address gaps in facility readiness; strengthen availability of essential medicines, diagnostics, equipment, and basic technologies; improve referral pathways and communication between community and facility levels; strengthen procurement, inventory management, and supply monitoring.	Ministry of Health; district health management teams; PHUs; procurement and supply agencies; partners	Short–medium term	Essential medicine availability; diagnostic stock-out frequency; facility-readiness measures; referral completion; service availability
P3. Integrated digital health and information systems	Improve interoperability among digital and routine health-information platforms; strengthen community-level electronic reporting; integrate digital referral and feedback mechanisms; expand appropriate use of digital tools for CHW/CHO supervision and decision support; strengthen data-quality review and local use of information for planning.	Ministry of Health; health-information units; district teams; PHUs; CHWs/CHOs; technology partners	Medium term; phased implementation	Reporting completeness and timeliness; data-quality measures; proportion of targeted services digitally reporting; referral-feedback completion; interoperability milestones; proportion of districts routinely using data for planning
P4. Epidemic-ready and resilient PHC	Embed surveillance, preparedness, infection prevention and control, early warning, emergency referral, and continuity planning within routine PHC; maintain emergency supply and staffing plans; conduct periodic preparedness exercises;	Ministry of Health; district health management teams; public-health/emergency units; PHUs; CHWs/CHOs; community leaders	Immediate and continuous	Surveillance reporting timeliness; preparedness assessments completed; proportion of facilities with continuity plans; IPC readiness; emergency stock availability; time from community alert to investigation

	strengthen community-level risk communication and event-based surveillance.				
P5. Sustainable financing and coordinated governance	Strengthen domestic financing for community health and PHC; integrate workforce and community-health priorities into routine budgets; improve transparency and accountability for resource allocation; coordinate external financing around national priorities; strengthen district-level planning and monitoring.	Government of Sierra Leone; Ministry of Health; Ministry of Finance; district authorities; development partners	Medium-long term		Domestic allocation to PHC/community health; budget execution; proportion of priority activities domestically financed; partner resources aligned with national plans; district plans implemented and reviewed
P6. Equity-centered and community-responsive healthcare delivery	Use geospatial, demographic, and service-utilization evidence to identify underserved populations; prioritize rural and hard-to-reach communities in workforce and resource allocation; strengthen community participation in planning and monitoring; integrate preventive, maternal-child, infectious-disease, and NCD services where feasible; monitor disparities in access and outcomes.	Ministry of Health; district teams; local government; PHUs; CHWs/CHOs; community organizations and leaders	Immediate and continuous		Geographic service-coverage gaps; utilization by district/population group; proportion of hard-to-reach communities receiving defined services; community participation measures; referral access; disparities in selected PHC indicators

Note. The implementation actions are derived from the strategic priorities generated through the SWOT–TOWS analysis. Implementation horizons indicate relative sequencing rather than fixed deadlines and should be adapted to national and district planning cycles, available resources, and changing health-system conditions. PHC = primary healthcare; PHU = peripheral health unit; CHW = community health worker; CHO = community health officer.

Interpretation of the Implementation Framework

Table 4 translates the TOWS-derived priorities into a coordinated implementation agenda rather than a collection of independent interventions. The framework indicates that workforce strengthening is foundational but insufficient on its own. Increasing the number of community health personnel without simultaneously addressing geographic deployment, remuneration, supervision, medicines, diagnostics, referral capacity, information systems, and facility readiness may increase nominal workforce capacity without producing corresponding improvements in accessible and reliable services. This distinction is particularly relevant given the documented coexistence of workforce shortages and distribution problems alongside trained personnel who may remain outside formal salaried employment. The manuscript identifies these workforce and fiscal constraints as interconnected rather than isolated problems.

Implementation should therefore occur across mutually reinforcing priorities. Workforce deployment and retention under P1 depend partly on adequate working conditions and service capacity under P2. Digital integration under P3 can support workforce supervision, referral, surveillance, and evidence-informed allocation under P1, P4, and P6. Similarly, sustainable financing and governance under P5 provide an enabling foundation for maintaining improvements across the other priorities. This interdependence reinforces the systems orientation of the SWOT–TOWS framework rather than suggesting that individual interventions will independently resolve community-health constraints.

The framework also positions resilience as part of routine PHC rather than solely an emergency-response function. Sierra Leone's accumulated experience with epidemics provides an important foundation for integrating surveillance, preparedness, community engagement, and continuity planning into everyday community-health operations. This approach is consistent with the article's identification of integrated epidemic preparedness as an opportunity to strengthen routine PHC.

Finally, equity operates both as a distinct strategic priority and as a cross-cutting implementation principle. Workforce expansion, digital transformation, infrastructure investment, and service integration cannot be considered successful solely on the basis of national-level improvements if rural, hard-to-reach, and socioeconomically disadvantaged populations remain underserved. Implementation monitoring should therefore examine not only aggregate progress but also the geographic and population distribution of benefits.

IV. DISCUSSION

This study applied an evidence-informed SWOT–TOWS approach to move beyond describing challenges within Sierra Leone's community health system toward identifying strategic pathways for system strengthening. The findings indicate that Sierra Leone is not building community-based primary healthcare (PHC) from an empty foundation. Rather, the country possesses important assets, including established Community Health Worker (CHW) and Community Health Officer (CHO) structures, national commitment to PHC and universal health coverage (UHC), community-based service platforms, experience with surveillance and epidemic response, and emerging digital-health capacity. At the same time, these strengths coexist with persistent workforce, financing, infrastructure, service-readiness, information-system, referral, and equity constraints. This coexistence is central to interpreting the findings because it suggests that sustainable improvement depends less on creating parallel structures and more on strengthening, connecting, financing, and equitably deploying capacities that already exist. This interpretation is consistent with the study's original premise that Sierra Leone's community-health challenges and capacities should be examined as interacting elements rather than as isolated conditions.

Community Health Workforce: From Expansion to Sustainability

One of the strongest findings emerging across the SWOT and TOWS analyses concerns the community health workforce. Sierra Leone's established CHW and CHO structures constitute an important strength because they extend frontline services into communities that may otherwise have limited access to formal healthcare. However, workforce presence does not necessarily ensure equitable workforce availability. Geographic maldistribution, shortages, inadequate remuneration, limited absorption of trained personnel into salaried positions, supervision gaps, and retention challenges constrain the effectiveness of the existing workforce. The finding that substantial healthcare needs can coexist with trained but unsalaried health workers illustrates that the workforce problem is not solely one of producing additional personnel; it also concerns the health system's capacity to employ, deploy, support, and retain them.

The strategic implication is that workforce policy should progressively shift from an emphasis on workforce expansion alone toward workforce sustainability. Increasing training capacity without corresponding attention to fiscal absorption, geographic deployment, supportive supervision, career progression, working conditions, and retention may have limited long-term impact. The TOWS analysis therefore supports a more integrated workforce strategy in which geospatial planning can guide deployment, mentorship and continuing professional development can strengthen competency, and financing mechanisms can improve workforce absorption and retention. Such an approach is particularly important for rural and hard-to-reach areas, where national increases in workforce numbers may obscure persistent local shortages.

Strengthening the Environment in Which Frontline Workers Deliver Care

The findings further demonstrate that community health workforce strengthening cannot be separated from the conditions under which frontline personnel provide services. Limitations in facility readiness, diagnostics, essential medicines, equipment, supply systems, referral capacity, and supervision can restrict what even a well-trained and appropriately deployed health worker can accomplish. Community health strengthening should therefore avoid treating workforce development as an isolated intervention and instead consider the broader service-delivery environment required for health personnel to translate their competencies into effective care.

This finding has important implications for PHC strengthening. Investments in workforce capacity should be accompanied by improvements in essential medicines and technologies, diagnostic availability, referral mechanisms, supply reliability, and communication between community and facility levels. The strategic objective is therefore not simply to increase the

presence of services but to improve their functional readiness and continuity. This distinction is important for UHC because geographic proximity to a health worker or facility does not necessarily constitute meaningful access when essential resources, referral mechanisms, or service capacity are inadequate.

Digital Health as an Enabling System Rather Than a Stand-Alone Intervention

Digital health emerged as both an existing capacity and an important opportunity for community health strengthening. The analysis suggests potential applications in surveillance, reporting, referral, workforce supervision, early warning, and evidence-informed planning. However, the strategic value of digital health depends on its integration with routine health-system functions. Digitalization should therefore not be understood primarily as the introduction of additional technologies but as an opportunity to improve connections among community workers, PHUs, district health structures, surveillance systems, and decision makers.

This distinction is particularly important given the identified limitations in health-information capacity and system fragmentation. Expansion of disconnected digital platforms could reproduce existing fragmentation in electronic form. The strategic priority should instead be interoperability, usability, data quality, and integration into routine decision-making. Digital systems could, for example, support geospatial workforce allocation, enable CHWs to submit community-level surveillance information, facilitate referral and feedback between community and facility levels, and provide supervisors with timely information about service delivery. The manuscript already recognizes digital health as an opportunity for strengthening surveillance, referral, workforce supervision, and evidence-informed decision-making. The TOWS analysis extends this finding by positioning digital capability as an enabling infrastructure across several strategic priorities rather than as a separate technological objective.

Integrating Health Security and Resilience Into Routine PHC

Sierra Leone's experience with major infectious-disease emergencies represents both evidence of vulnerability and an important source of institutional learning. Previous emergencies demonstrated how rapidly routine maternal, child, preventive, and other essential health services can be disrupted when health-system capacity is redirected toward crisis response. At the same time, these experiences strengthened knowledge and capabilities related to surveillance, community engagement, risk communication, preparedness, and emergency response. The SWOT analysis therefore appropriately identifies emergency-response experience as an existing strength while recognizing future epidemics and service disruption as continuing threats.

The TOWS findings suggest that the strategic response should be to institutionalize preparedness within routine PHC rather than maintain a sharp separation between emergency preparedness and everyday service delivery. This means embedding surveillance, early warning, infection prevention and control, emergency referral, supply preparedness, community communication, and continuity planning within routine community-health operations. Such integration could allow community-level systems to identify emerging threats earlier while preserving essential services during emergencies. This direction is consistent with the growing emphasis identified in the reviewed evidence on integrating epidemic preparedness into PHC.

Resilience should consequently be understood as more than the capacity to respond after a crisis occurs. Within the strategic framework developed in this study, resilience includes the ability to anticipate threats, absorb disruption, maintain essential functions, adapt service delivery, and learn from previous emergencies. This interpretation places community health workers, information systems, supply chains, referral mechanisms, and community relationships at the center of health-system resilience.

Financing and Governance as Enabling Conditions

A further finding is that many of the identified community-health challenges ultimately intersect with financing and governance. Workforce absorption requires sustainable financing; facility readiness requires predictable resources; digital systems require investment and coordination; essential medicines require functioning procurement and supply systems; and preparedness requires sustained investment before emergencies occur. Consequently, financing cannot be treated as a separate health-system issue but functions as an enabling condition across the strategic priorities.

The coexistence of trained but unsalaried personnel and continuing workforce shortages illustrates this relationship particularly clearly. Increasing the supply of trained workers without sufficient fiscal capacity to employ them may produce a mismatch between human-resource availability and actual service capacity. Similarly, dependence on external resources

can provide opportunities for accelerated system strengthening while creating vulnerability when donor priorities or funding levels change. The TOWS analysis therefore supports greater alignment of external assistance with nationally determined priorities alongside progressive strengthening of domestic financing and institutional ownership.

Governance is equally important because the effectiveness of available resources depends on how they are prioritized, coordinated, allocated, and monitored. Stronger coordination among national authorities, district health structures, PHUs, communities, training institutions, and development partners may help reduce fragmentation and ensure that investments contribute to common PHC objectives rather than parallel programs. The strategic emphasis is therefore not simply on obtaining additional resources but on improving the coordination, allocation, accountability, and sustainability of those resources.

Equity as a Cross-Cutting Measure of System Performance

Equity emerged throughout the analysis rather than as an isolated health-system concern. Sierra Leone's community health structures are particularly important because they can extend services toward rural, remote, and underserved populations. Yet geographic maldistribution of health personnel and continuing differences in access indicate that national expansion does not automatically produce equitable coverage. The evidence concerning CHW deployment demonstrates the importance of considering population distribution, distance from health facilities, and geographic barriers when allocating community health resources (Kallon, et al., 2023).

The strategic implication is that equity should function as a criterion for evaluating every major health-system investment. Workforce policies should assess where personnel are deployed, not merely how many are employed. Digital-health initiatives should consider whether connectivity and technological access extend to hard-to-reach communities. Facility investment should consider geographic service gaps. Financing decisions should examine which populations benefit from resource allocation. Similarly, service-integration strategies should consider whether maternal-child health, infectious-disease services, NCD care, prevention, and health promotion are reaching populations experiencing the greatest barriers.

This approach shifts the assessment of community health strengthening from national averages toward the distribution of improvements across populations and locations. Progress toward UHC should therefore be evaluated not only by whether overall service coverage increases but also by whether disparities between better-served and underserved populations decrease.

Contribution of the SWOT–TOWS Approach

A key contribution of this study is its progression from evidence to strategic action. While SWOT identifies strengths, weaknesses, opportunities, and threats, TOWS examines how these factors interact to generate actionable strategies. In Sierra Leone, this reveals how existing CHW capacity, digital-health opportunities, workforce constraints, fiscal pressures, and epidemic-response experience can be strategically combined rather than addressed independently. Consolidating these interactions into six priorities, workforce sustainability, PHC readiness, digital integration, epidemic-ready PHC, sustainable financing and governance, and equity-centered delivery, provides an integrated framework for community health-system strengthening rather than a fragmented set of interventions.

Implications for Policy and Practice

The findings suggest that policy implementation should prioritize integration and sequencing. Some actions, such as strengthening supportive supervision, improving workforce deployment using existing data, enhancing community surveillance, and identifying gaps in essential supplies, may be achievable within existing structures and relatively short planning horizons. Other priorities, including workforce absorption, interoperable digital infrastructure, sustainable domestic financing, and major improvements in PHC infrastructure, are likely to require longer-term institutional and fiscal commitments.

Implementation should also recognize interdependence among priorities. For example, deploying additional health workers to underserved areas without medicines, diagnostics, referral capacity, supervision, or appropriate working conditions may produce limited gains and potentially worsen retention. Similarly, introducing digital systems without interoperability, workforce training, reliable data processes, and local decision-making capacity may generate information without improving care. Policy planning should therefore identify combinations of mutually reinforcing interventions rather than implementing individual recommendations in isolation.

The framework also supports adaptive implementation. The manuscript's conceptual model explicitly incorporates implementation, monitoring, evaluation, learning, and policy adjustment as a feedback pathway. The SWOT profile should consequently not be viewed as permanent. Workforce conditions, financing environments, technologies, disease threats, and community needs will change. Periodic reassessment of the SWOT factors and TOWS priorities could allow policymakers to modify strategies as internal capacities and external conditions evolve.

Study Limitations

This study has several limitations. As a scoping review, its findings depend on the availability and quality of published and grey literature and may underrepresent poorly documented aspects of Sierra Leone's community health system. Although grey literature provided important policy and implementation evidence, reporting quality may vary across sources. SWOT classification also involves analytical judgment, despite systematic evidence mapping. Moreover, TOWS strategies represent evidence-informed options rather than tested interventions and therefore require stakeholder validation, feasibility assessment, costing, and evaluation before implementation. Finally, national-level findings may not capture district and community differences; strategies should therefore be adapted to local workforce, infrastructure, disease burden, and service-access conditions.

Future Research

Future research should extend the evidence-informed framework through stakeholder validation and implementation research. Policymakers, district health managers, CHOs, CHWs, facility leaders, community representatives, training institutions, and development partners could assess the feasibility, acceptability, urgency, and resource requirements of the proposed priorities. A structured Delphi process or stakeholder priority-setting exercise could further establish consensus regarding which TOWS-derived strategies warrant early implementation.

Research should also examine the relative costs and expected benefits of the proposed strategic priorities. Workforce absorption and retention, digital interoperability, facility readiness, supply-chain strengthening, and epidemic preparedness compete for limited resources, making economic and implementation evidence particularly important. District-level studies could determine whether the strategic priorities identified nationally require different sequencing in urban, rural, remote, and otherwise underserved settings.

Finally, longitudinal evaluation will be necessary to determine whether implementation produces measurable improvements in workforce distribution and retention, PHC readiness, service continuity, information-system performance, emergency preparedness, equity, and UHC-related outcomes. Such evaluation would allow the SWOT–TOWS framework to function as a recurring strategic-learning mechanism rather than a one-time situational assessment.

V. CONCLUSION

Sierra Leone's community health system has important strengths, including established CHW and CHO structures, community-based services, epidemic-response experience, and emerging digital-health capacity, but persistent workforce, financing, service-readiness, information-system, and equity constraints limit their effectiveness. The SWOT–TOWS analysis identified six interconnected priorities: equitable workforce strengthening, PHC readiness, digital integration, resilient PHC, sustainable financing and governance, and equity-centered service delivery. Sustainable improvement therefore requires an integrated systems approach that strengthens existing capacities rather than creating parallel structures. Stakeholder validation, appropriate resource allocation, measurable targets, and continuous evaluation will be essential for translating these priorities into a more equitable, resilient, and sustainable community health system

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