

Between the Household and the Facility: Community Health Workers, Traditional Birth Attendants, and Village Health Committees in Maternal Health Service Delivery in Kenema District, Sierra Leone

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Abstract

Background

Sierra Leone records one of the highest maternal mortality ratios globally, and the majority of the delay that produces these deaths occurs before a woman reaches a health facility. In that pre-facility space, three community structures mediate care: community health workers (CHWs), traditional birth attendants (TBAs), and Village Health Committees (VHCs). Each has been redefined by national policy, yet district-level evidence on how they now function, and on how the referral chain between them and the formal system holds together, is limited. This study examined the three structures as an interdependent system within a single high-burden district.

Methods

A mixed-methods cross-sectional study was conducted in Kenema District, Eastern Province. A structured questionnaire was administered to 408 respondents (97.1% of 420 targeted) recruited through multi-stage sampling across Kenema Government Hospital and seven peripheral health units spanning urban, peri-urban, and rural catchments, and complemented by key informant interviews with health professionals, CHWs, TBAs, and community leaders, and by focus group discussions. Quantitative data were analysed in SPSS using descriptive statistics and chi-square tests; qualitative data were thematically analysed and integrated through joint display.

Results

CHWs were the most consistently used link between households and the health system: 61.3% of respondents reported regular CHW home visits, 58.8% consulted CHWs for pregnancy advice, and 63.5% took part in CHW-led sensitisation. TBAs remained a parallel first point of contact, consulted by 44.6% of respondents. VHCs were the weakest structure: only 27.5% of respondents participated regularly in VHC activities; the lowest of all community activities, against 54.1% for immunisation outreach, and weak VHC functionality was the single most frequently reported barrier to involvement (72.5%). The collective and emergency functions that depend on a working committee were uniformly thin: 32.4% of communities had an emergency transport arrangement, 28.2% an emergency fund, 24.8% referral support, and 19.6% a blood-donor list. Household decision-making remained male-dominated (68.2%) relative to women's reported involvement in maternal health discussions (43.1%).

Conclusions

The pre-facility system in Kenema District has a functioning outreach arm and a broken governance and emergency arm. Recognition and first contact are achieved by CHWs and TBAs, but the VHC-dependent

functions that convert recognition into timely facility arrival are largely absent. Reform of any single cadre in isolation is unlikely to close the second delay; strengthening the committee layer and the emergency logistics it is meant to coordinate is the binding constraint.

1. Introduction

Maternal mortality in sub-Saharan Africa remains concentrated in the interval between the onset of an obstetric complication and the arrival of skilled care. The Three Delays framework (Thaddeus & Maine, 1994) locates the determinants of that interval in the decision to seek care, in reaching care, and in receiving adequate care on arrival. The first two delays are resolved, or not resolved, outside the health facility; in households, in communities, and in the hands of whichever actors are present when labour begins at night and the nearest functioning facility is several hours away. Sierra Leone, with a maternal mortality ratio estimated at 717 deaths per 100,000 live births (Statistics Sierra Leone [SSL] & ICF, 2019), depends heavily on how well that pre-facility space is organised.

Three community structures occupy it. Community health workers (CHWs), formalised under the National Community Health Worker Policy, form the outermost tier of the public health system and are tasked with case identification, health promotion, accompaniment, and referral (Ministry of Health and Sanitation [MoHS], 2021; WHO, 2019). Traditional birth attendants (TBAs) have historically attended a substantial share of deliveries in rural Sierra Leone, drawing authority from kinship, longevity of residence, and cultural legitimacy rather than from formal training. Village Health Committees (VHCs) are intended to provide local governance: a platform through which communities organise collective resources such as emergency transport and blood donation, and hold facilities to account.

The policy trajectory of each has diverged. Where CHW programmes are adequately trained, supervised, supplied, and remunerated, they have contributed to substantial gains in maternal and child health, as in Rwanda and Ethiopia (Binagwaho et al., 2021; Wang et al., 2022; WHO, 2019). TBAs, by contrast, have been repositioned by policy away from conducting deliveries and toward promotion and referral, on the strength of evidence that TBA attendance without linkage to emergency obstetric care does little to reduce mortality; the more productive question is whether TBAs can be integrated as a functioning link into the skilled-care system rather than excluded from it (Smith et al., 2020). VHCs have received the least attention of the three, yet health facility and village committees improve accountability only where they possess genuine authority and resources, and otherwise persist as nominal structures (Agyepong et al., 2017; McCoy et al., 2012; Molyneux et al., 2012).

These three structures are typically studied separately and evaluated against their own programmatic objectives. That framing obscures the question that matters most for maternal survival: whether they constitute a working chain. A woman in obstructed labour in a remote chiefdom is served not by a CHW, a TBA, or a VHC individually, but by whether recognition, decision, transport, and arrival can be accomplished in sequence and at speed. Each handoff in that sequence is a potential point of failure, and failures at handoffs are invisible to evaluations that assess each structure in isolation.

This study examined the three structures as an interdependent system within Kenema District. Its objectives were to describe the roles that CHWs, TBAs, and VHCs currently perform in maternal health; to assess the functionality of the referral and emergency pathway linking them to the formal health system; and to identify where in that pathway the system is thinnest. In doing so it addresses a gap that is practical as well as scholarly: district health management teams are required to strengthen community structures without district-level evidence on how those structures presently operate.

2. Materials and Methods

2.1 Study design

A mixed-methods cross-sectional design was adopted, following the convergent design logic described by Creswell and Plano Clark (2018). The quantitative strand measured the reported activity, coverage, and referral-related practice of the three community structures and tested associations with respondent characteristics. The qualitative strand examined how these actors understand their roles and how referral decisions are made in practice. The strands were conducted concurrently and integrated at interpretation, because referral is simultaneously a countable event and a negotiated social act.

2.2 Study setting

The study was conducted in Kenema District, Eastern Province, Sierra Leone. The district covers approximately 6,053 km², is subdivided into 17 chiefdoms, and had an estimated population of 772,472, of whom approximately 51% were female (Statistics Sierra Leone, 2021). The economy is predominantly agrarian, centred on rice farming, cocoa production, and small-scale trading, with Kenema City serving as the administrative and commercial centre. Health services are delivered through Kenema Government Hospital (KGH), the district referral facility, and a network of peripheral health units (PHUs). The district was purposively selected for its high maternal mortality burden relative to national estimates, its combination of urban and rural populations permitting within-district comparison, and the presence of active community structures including CHWs, TBAs, women's groups, and traditional and religious leadership.

2.3 Study population and sampling

The study population comprised individuals directly or indirectly involved in maternal health in the district: women of reproductive age (15–49 years), particularly those pregnant or delivered within the preceding 24 months; spouses, caregivers, and household decision-makers; CHWs and Maternal and Child Health Aides; TBAs; health professionals; and community leaders including chiefs, religious leaders, and women's group heads.

A multi-stage sampling strategy was applied. In the first stage, KGH and seven PHUs — Tongo and Ngeihun (Lower Bambara), Kpetema (Tunkia), Samai Town (Niawa), Kpandembu (Dama), Joru (Kandu Leppiama), and Baoma (Nongowa) — were purposively selected for their involvement in maternal and child health programming and their combined coverage of urban, peri-urban, and remote rural

catchments. In the second stage, respondents were stratified into six categories – women of reproductive age, family members, CHWs and MCH Aides, TBAs, health professionals, and community leaders. Women and family members were selected by simple or systematic random sampling from PHU registers and household listings; CHWs and community leaders purposively; health professionals by stratified purposive sampling; and TBAs, whose activity is not comprehensively registered, through snowball referral initiated by facility staff and community leaders. Applying Cochran's formula with a finite-population correction to a catchment of 71,770 yielded a minimum of 382, and a 10% contingency gave a target of 420.

2.4 Data collection

Quantitative data were collected using a structured, pre-tested questionnaire administered by trained enumerators fluent in Mende and Krio. Items covered respondent characteristics; contact with CHWs, TBAs, and VHCs; the community activities in which respondents participated; community-level emergency preparedness arrangements; and reported barriers to involvement. The instrument was pre-tested at Blama CHC, a facility not included in the main study. Qualitative data were collected through key informant interviews with health professionals, CHWs, TBAs, and community leaders, and through focus group discussions with community members conducted separately by sex. Interviews and discussions were conducted in the respondent's preferred language, audio-recorded with consent, transcribed, and translated into English. Fieldwork was conducted over an eight-week period.

2.5 Data analysis

Quantitative data were entered, double-checked, and analysed in IBM SPSS Statistics (version 26). Descriptive statistics summarised the reported roles and coverage of each structure. Chi-square tests of independence examined associations between respondent characteristics and participation, with statistical significance set at $p < 0.05$. Qualitative data were analysed thematically following Braun and Clarke (2019): transcripts were read for familiarisation, coded, and codes organised into themes through iterative comparison, with the aid of NVivo 12. Integration of the two strands was achieved through joint displays pairing statistical findings with the qualitative mechanisms that explain them.

2.6 Ethical considerations

Ethical approval

was granted by the Njala University Research Ethics Committee, with administrative clearance from the Kenema District Health Management Team and KGH management [author to insert protocol reference number]. Written informed consent was obtained from all participants; for participants under 18 years, guardian consent was obtained alongside assent. Participation was voluntary, respondents could decline any question or withdraw at any point, and data were anonymised at transcription and stored securely. TBAs were assured that their responses would not be reported to regulatory authorities in identifiable form, given the policy sensitivity of their role.

3. Results

3.1 Respondent characteristics

Of 420 targeted respondents, 408 completed valid questionnaires (response rate 97.1%). The mean age was 31.4 years (SD 8.6), with most respondents aged 25–34 (41.2%). The sample was predominantly Muslim (71%) and agrarian, with farmers the largest occupational group (45.8%). Most respondents were multiparous. Detailed socio-demographic characteristics are summarised in Table 1; the full demographic profile of this sample is reported in the companion paper on the determinants of community involvement.

Table 1
Selected characteristics of respondents (n = 408)

Characteristic	Category	n	%
Age group (years)	15–24	73	17.9
	25–34	168	41.2
	35–44	104	25.5
	≥ 45	63	15.4
Occupation	Farmer	187	45.8
	Petty trader	86	21.1
	Housewife / unemployed	69	16.9
	Civil servant / private	66	16.2
Parity	0–1	98	24.0
	2–3	146	35.8
	4–5	104	25.5
	≥ 6	60	14.7
Religion	Islam	—	71
	Christianity	—	26
	Traditional	—	3

Religion reported as percentages in the source data; category counts not separately recorded.

3.2 Community health workers as the primary outreach link

CHWs were the community structure most consistently in contact with households. A majority of respondents reported receiving regular CHW home visits (61.3%), consulting CHWs for pregnancy-

related advice (58.8%), and participating in CHW-led community sensitisation (63.5%) (Table 2). Qualitative accounts positioned CHWs as the effective interface between the community and the formal system, and as the trigger for much of the participation that did occur.

Table 2
Reported engagement with community structures (n = 408)

Engagement indicator	Yes (%)	No (%)
Receives regular home visits from CHWs	61.3	38.7
Consults CHWs for pregnancy-related advice	58.8	41.2
Participates in CHW-led community sensitisation	63.5	36.5
Consults TBAs for pregnancy support	44.6	55.4
<i>“Most women only participate when CHWs come to remind them. Community meetings usually attract few people unless there is a crisis.” – CHW, Nongowa chiefdom, KII</i>		

3.3 Traditional birth attendants as a parallel channel

Alongside this CHW outreach, TBAs remained a substantial first point of contact: 44.6% of respondents reported consulting a TBA for pregnancy support (Table 2). The two systems therefore operated in parallel rather than in sequence, with a large minority of women engaging traditional and biomedical providers concurrently. Health workers described this co-existence as a source of delay when TBA consultation preceded, rather than fed into, facility care.

“Some women come to us late because they first go to TBAs for advice. Community structures need strengthening so CHWs can reach every household.” – Midwife, Ngeihun CHP, KII

3.4 Participation across community activities

When participation was disaggregated by activity, a clear gradient emerged (Table 3). Regular participation was highest for immunisation outreach (54.1%) – proximate, frequent, and often incentivised – and progressively lower for antenatal sensitisation (42.9%) and general maternal health meetings (38.7%). It was lowest of all for Village Health Committee activities (27.5%), the one structure explicitly charged with deliberation, governance, and resource mobilisation. Nearly a quarter of respondents (23.7%) reported never participating in VHC activities.

Table 3
Participation in community maternal health activities (n = 408)

Activity	Regularly (%)	Occasionally (%)	Never (%)
Outreach immunisation campaigns	54.1	36.0	9.9
Antenatal community sensitisation	42.9	39.0	18.1
Community maternal health meetings	38.7	46.6	14.7
Village Health Committee (VHC) activities	27.5	48.8	23.7

"People will come out for vaccination days, but when you call for meetings to discuss community health issues, they don't attend." — Chiefdom youth leader, KII

3.5 Village Health Committee functionality and community governance

The low participation in VHC activities was mirrored in respondents' assessment of the committees themselves. Weak functionality of Village Health Committees was the single most frequently reported barrier to community involvement, cited by 72.5% of respondents — ahead of male dominance in decision-making (68.2%), transport distance (61.9%), and economic hardship (58.1%). The barrier was therefore not primarily the absence of willingness or awareness but the absence of a working platform through which willingness could be organised.

Community governance of maternal health was also gender-skewed. While 68.2% of respondents reported that husbands participated in maternal health decision-making, only 43.1% reported that women participated in maternal health discussions, and 59.5% reported that community leaders actively promoted maternal health (Table 4). Decision-making authority thus sat largely outside the group most directly affected. In the composite participation analysis reported in the companion paper, education was significantly associated with overall participation ($\chi^2 = 21.74$, $df = 3$, $p < 0.001$) and household income was moderately correlated with it ($r = 0.41$, $p < 0.001$), indicating that the capacity to engage with these structures was itself socially patterned.

Table 4
Participation in community maternal health decision-making (n = 408)

Indicator	Yes (%)	No (%)
Husbands participate in maternal health decision-making	68.2	31.8
Community leaders actively promote maternal health	59.5	40.5
Women participate in maternal health discussions	43.1	56.9

3.6 Emergency preparedness and the referral chain

The functions that depend most directly on a working committee – collective emergency arrangements – were uniformly the weakest in the system (Table 5). Fewer than a third of respondents reported that their community maintained an emergency transport arrangement (32.4%); fewer than a third that a household had contributed to an emergency fund (28.2%); a quarter that they had participated in referral support (24.8%); and fewer than a fifth that their community maintained a blood-donor list (19.6%). Because obstetric emergencies are time-critical and the second delay is largely determined by community-level logistics, this cluster of deficits represents the point at which the pre-facility chain is most likely to break.

Table 5
Community emergency preparedness and referral arrangements (n = 408)

Emergency preparedness indicator	Yes (%)	No (%)
Community has an emergency transport arrangement	32.4	67.6
Household has contributed to an emergency fund	28.2	71.8
Respondent has participated in referral support	24.8	75.2
Community maintains a blood-donor list	19.6	80.4
<i>“When labour starts at night, transport is the biggest problem. Sometimes we just pray for the woman because help takes long to arrive.” – Female participant, rural FGD</i>		
<i>“People want to help, but most families struggle to feed themselves. Asking for contributions is difficult.” – Community elder, KII</i>		

3.7 Integration of quantitative and qualitative findings

Table 6 presents a joint display integrating the pattern across the three structures with the mechanisms participants described. Convergence between the strands was high: outreach and first contact, carried by CHWs and TBAs, were relatively well established, whereas the committee-dependent functions of governance, resource mobilisation, and emergency coordination were both statistically weakest and qualitatively described as the point of failure. The direction of every quantitative pattern was consistent with the mechanism reported by participants.

Table 6
Joint display: community structures across the pre-facility pathway

Pathway function	Quantitative finding	Qualitative mechanism
Outreach and recognition	CHW home visits 61.3%; CHW-led sensitisation 63.5%	CHWs prompt participation and relay danger-sign information; participation often occurs only when CHWs remind households
First contact / advice	TBA consultation 44.6%; CHW consultation 58.8%	Traditional and biomedical channels used in parallel; TBA-first consultation can delay facility care
Governance / deliberation	Regular VHC participation 27.5%; weak VHC functionality reported by 72.5%	No working committee platform through which willingness is converted into organised action
Emergency logistics	Transport 32.4%; fund 28.2%; referral support 24.8%; blood-donor list 19.6%	Absence of a fund-holder and roster means goodwill cannot be mobilised at the speed an emergency requires
Decision authority	Husbands 68.2% vs women 43.1%	Care-seeking decisions sit largely outside the group most directly affected

4. Discussion

Examined together, the three community structures in Kenema District do not form a continuous chain. Recognition and first contact are relatively well served: CHWs reach a majority of households and TBAs a large minority, and the two operate in parallel. But the functions that would convert recognition into timely facility arrival – committee governance and emergency logistics – are uniformly weak, and are the most frequently identified barrier to involvement. The system has a working outreach arm and a broken governance and emergency arm.

4.1 A functioning outreach tier

That CHWs were the most consistently used structure – reaching 61.3% of households through regular home visits and prompting much of the participation that occurred – is consistent with evidence that CHW systems can extend the reach of primary care into underserved communities when adequately supported (Binagwaho et al., 2021; Wang et al., 2022; WHO, 2019). The qualitative accounts qualify this, however: participation frequently occurred only when CHWs actively reminded households, suggesting that engagement was CHW-dependent rather than self-sustaining. Reported contact is also not a measure of the supervision, supply, and remuneration that determine CHW effectiveness, and these were not assessed here.

4.2 Persistent dual-system care-seeking

The finding that 44.6% of respondents consulted TBAs, in a policy environment that has repositioned TBAs away from conducting deliveries, indicates that demand for their role has not disappeared. Where

distance, cost, and the anticipated quality of facility reception continue to make institutional care difficult, restricting the supply of an alternative does not by itself produce facility care; it produces parallel care-seeking of the kind the midwives described, in which TBA consultation precedes rather than feeds into facility attendance. The more productive policy response, consistent with the evidence, is to position TBAs as a recognised first link that channels women into skilled care rather than as a channel to be closed (Smith et al., 2020). An important limitation must be stated plainly: the survey measured consultation of TBAs for pregnancy support, not TBA-attended delivery, and the present data cannot quantify the latter.

4.3 The governance gap

The weakest structure was the one intended to govern. That regular VHC participation (27.5%) was the lowest of all activities, and that weak VHC functionality was the most frequently reported barrier (72.5%) — exceeding transport distance and economic hardship — identifies the absence of a working platform rather than the absence of willingness. Where health facility and village committees function effectively, as documented in Ghana and elsewhere, they improve transparency, accountability, and service satisfaction (Agyepong et al., 2017); the broader evidence indicates that committees improve accountability only where they hold genuine authority and resources, and otherwise persist as nominal structures (McCoy et al., 2012; Molyneux et al., 2012). Their weakness in Kenema deprives communities of the institutional vehicle through which participation could be converted into influence, and confines engagement to the episodic, service-linked activities in which participation was in fact highest.

4.4 The chain, not the links

The central implication of examining the three structures together is that each may perform adequately against its own indicator while the chain they collectively constitute still fails. A CHW who correctly relays a danger sign and a TBA who correctly advises facility care do not add up to a saved life if no transport arrangement, fund, or blood-donor roster exists to move the woman in time — and in Kenema, all three of these committee-dependent functions were reported by fewer than a third of respondents. Emergency transport schemes elsewhere in the region depend on a functioning local committee to hold funds, maintain rosters, and coordinate response (Amoakoh-Coleman et al., 2019; Hagen et al., 2019). Without such a body, community goodwill during an obstetric emergency cannot be operationalised at the speed the emergency requires, and the second delay persists regardless of how well the outreach tier performs. Programme evaluation conducted structure by structure is incapable of detecting this, because the failure occurs in the intervals rather than in the components.

4.5 Urban–rural considerations

Qualitative accounts indicated that the barriers to sustaining these structures took different forms across settings; urban respondents emphasising time pressure and weak social cohesion, rural respondents' distance, seasonal labour, and rigid social hierarchy, while converging in effect. This implies that a single national model for strengthening community structures, applied uniformly, will

underperform in both. The present data do not, however, permit a quantified urban–rural comparison of structure-specific coverage, and this contrast should be regarded as indicative rather than measured.

4.6 Implications for policy and practice

Four implications follow. First, the referral chain should be treated and monitored as a system rather than as three separate cadres, with indicators capturing emergency readiness; transport, funds, blood-donor rosters, rather than outreach coverage alone. Second, VHC monitoring should measure functionality (meeting regularity, fund-holding, follow-up with facilities) rather than mere existence, since existence indicators would report near-universal coverage in a setting where the committees are largely dormant. Third, TBAs should be recognised and linked to referral rather than excluded, so that the 44.6% first-contact channel feeds skilled care instead of competing with it. Fourth, a district emergency transport arrangement with a designated fund-holder should be established, since this is the specific missing function on which the outreach tier’s work currently founders.

4.7 Strengths and limitations

Strengths of this study include the concurrent examination of three structures usually studied separately, a high response rate (97.1%), sampling across urban and rural chiefdoms within a single district, and the inclusion of CHWs, TBAs, and health professionals as respondents in their own right rather than as objects of report by others.

Several limitations should be noted. The cross-sectional design precludes causal inference. Reported contact and referral experience are subject to recall and social-desirability bias, and reporting of TBA involvement is particularly susceptible to under-reporting in a policy environment where the delivery role is restricted; the TBA figure should be regarded as a lower bound, and TBA-attended delivery was not measured. The structure-specific cross-tabulations were descriptive; the only inferential statistics available related to the composite participation index, and adjusted analyses controlling for wealth and education; which are correlated with participation, should be added from the analysis dataset before strong causal claims are made. Snowball recruitment of TBAs may over-represent those in contact with the formal health system. Finally, findings from one district are not directly generalisable to Sierra Leone as a whole, although the structural conditions described are common across the Eastern Province.

5. Conclusion

In Kenema District, the community structures that occupy the space between the household and the facility function very unevenly. Community health workers provide a relatively strong outreach tier and traditional birth attendants remain a widely used parallel channel, but Village Health Committees; the structure charged with governance, resource mobilisation, and emergency coordination, are the weakest element, and the emergency functions that depend on them are present in fewer than a third of communities.

The implication is that maternal survival in this setting depends less on the performance of any single cadre than on the integration between them, and specifically on the committee layer that is currently missing. Policy that reforms CHWs, TBAs, or VHCs in isolation will not close the second delay. Strengthening the governance and emergency-logistics functions of the community system; and linking traditional first contact to skilled referral, is the binding constraint on converting the district's existing outreach capacity into timely, life-saving care.

Declarations

Ethics approval and consent to participate.

Ethical approval was granted by the Njala University Research Ethics Committee, with administrative clearance from the Kenema District Health Management Team and Kenema Government Hospital. Written informed consent was obtained from all participants. No minors were involved in the study and no experiments were conducted.

Human Samples and Experiments.

Not Applicable

Consent for publication.

Not applicable.

Competing interests.

The authors declare that they have no competing interests.

Author Contribution

ECM conceived and designed the study, collected and analysed the data, and drafted the manuscript. RA and BK supervised the study and reviewed the manuscript. ATB led data collection, transcription and analysis and reviewed the results section of the final manuscript. All authors read and approved the final manuscript.

Acknowledgement

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Data Availability

The datasets collected and analysed during the current study for which results are presented and conclusions are drawn are available from the corresponding author on reasonable request.

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