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Community-Based Interventions for Reducing Maternal Mortality in Underserved Regions

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Abstract

Maternal mortality remains heavily concentrated in underserved regions of sub-Saharan Africa and South Asia, where most deaths are preventable but occur before a woman ever reaches functioning emergency obstetric care. This article synthesizes several decades of research on community-based interventions designed to close that gap, including trained community health workers delivering structured home visits and women's groups practising participatory learning and action (PLA) cycles. We trace the evidence from foundational home-based neonatal care trials in rural India through the cluster-randomised trials of women's-group mobilization in Nepal, India, Bangladesh, Malawi and Ghana, to the systematic reviews and meta-analyses that now pool these results, giving particular weight to the population-coverage threshold that appears to determine whether a maternal-mortality benefit, not just a neonatal one, is achieved. Read together, the evidence supports community-based intervention, and women's groups specifically, as a coherent and increasingly well-evidenced complement to facility-based obstetric care rather than a substitute for it, while leaving generalizability across health systems, sustainability beyond the trial period, and the coverage levels required for a maternal-mortality effect as an open research and implementation agenda.

Keywords: maternal mortality; community-based intervention; women's groups; community health workers; underserved regions

1. Introduction

Maternal mortality has fallen substantially since the 1990s, yet the decline has been strikingly uneven. Global estimates place roughly two-thirds of all maternal deaths in sub-Saharan Africa, with the remainder concentrated in South Asia and a handful of fragile or conflict-affected states, and the lifetime risk of a maternal death for a woman in the lowest-income countries remains orders of magnitude higher than in high-income settings [1,2]. Ronsmans and Graham's widely cited framing of the problem — "who, when, where, and why" women die of pregnancy-related causes — makes a point that has aged well: most maternal deaths cluster around labour, delivery, and the immediate postpartum period, occur disproportionately among the poorest and most geographically isolated women, and are, in the overwhelming majority of cases, preventable with interventions that are neither exotic nor expensive [3]. What is scarce in these settings is not knowledge of what works in principle but reliable access to it: a skilled attendant at birth, timely recognition of danger signs, and a functioning pathway to emergency obstetric care when something goes wrong.

Facility-based strategies — training more skilled birth attendants, building more emergency obstetric units, improving referral hospitals — remain the backbone of any serious maternal survival strategy, and this article does not argue otherwise [4]. But a substantial and now decades-deep body of research has asked a narrower, more practical question: what can be done in the community itself, in the months before a woman ever reaches a facility (if she reaches one at all), to reduce her risk of dying and her newborn's risk of dying in the first place? Community-based interventions — home visits by trained community health workers, women's groups that meet regularly to discuss maternal and newborn danger signs, birth-preparedness planning, and community-level distribution of low-cost interventions such as clean delivery kits — have been trialled, in cluster-randomised form, across rural India, Nepal, Bangladesh, Malawi, and Ghana, among other settings, since at least the late 1990s [5,6,7,8,9]. The resulting literature is large enough, and now mature enough, to support systematic review and meta-analysis rather than reliance on any single trial [10,11,12].

This article synthesizes that literature. Our aim is not to report a new trial or a new meta-analysis, but to pull

together what a genuinely substantial set of cluster-randomised controlled trials, systematic reviews, and health-policy analyses has found about community-based interventions for reducing maternal (and, inevitably, closely linked neonatal) mortality in underserved regions, and to be honest about where the evidence is strong, where it is mixed, and where it remains thin. We organize the discussion around five themes: the scale and distribution of the problem these interventions are meant to address; the community health worker and home-visiting model, which has the longest trial history; women's groups practising participatory learning and action, which has produced the most consistent recent evidence of mortality reduction; the question of how community interventions connect to (and cannot substitute for) the referral and facility-based system; and what the accumulated meta-analytic evidence says when the individual trials are pooled. We close with a discussion of open challenges — heterogeneity of effect across contexts, the population-coverage threshold that appears to matter more than any single design feature, and the difficulty of separating a truly "community" effect from simultaneous improvements to the health system around it.

It is worth being explicit about scope and about what this synthesis is not claiming. Several of the most influential trials in this literature were conducted twenty-plus years ago, in specific rural settings in South Asia, and their effect sizes — some strikingly large — have not always replicated cleanly when the same intervention design has been tested elsewhere [9,13]. We are not claiming that community mobilisation is a substitute for functioning emergency obstetric care, nor that any single intervention design travels unmodified from one health system to another. What the literature does support, read as a whole, is that community-based approaches — particularly participatory women's groups and trained community health worker home-visiting programmes — produce measurable, reasonably consistent reductions in neonatal mortality, and, under specific conditions of population coverage, in maternal mortality as well, and that these effects are large enough and cheap enough to warrant a permanent place in maternal survival strategy rather than treatment as a stopgap for places that cannot yet afford facility-based care.

2. The Global Burden and Persistence of Maternal Mortality in Underserved Regions

The scale of the problem is easy to state and easy to underappreciate. The World Health Organization's systematic analysis of the global causes of maternal death, led by Say and colleagues, found that direct obstetric causes — haemorrhage, hypertensive disorders, sepsis, and complications of unsafe abortion — together account for the majority of maternal deaths worldwide, with haemorrhage alone responsible for roughly a quarter of maternal deaths in developing regions, and with indirect causes (pre-existing conditions exacerbated by pregnancy, including HIV and malaria in many high-burden settings) accounting for a substantial and rising share [1]. Nearly all of these causes share a common structural feature relevant to this article: each is survivable with timely, competent intervention, and each becomes lethal disproportionately often when the woman experiencing it is geographically or economically distant from that intervention.

Alkema and colleagues' UN Maternal Mortality Estimation Inter-Agency Group analysis, tracking levels and trends from 1990 to 2015, documented real and substantial global progress — a roughly 44% decline in the global maternal mortality ratio over that period — alongside a persistence of extreme disparity that the global average obscures [2]. Sub-Saharan Africa and South Asia together accounted for the large majority of the estimated 303,000 maternal deaths in 2015 that anchored their analysis, and the pace of decline in the highest-burden countries lagged well behind the pace needed to meet the health-related Sustainable Development Goal targets that followed. Kruk and colleagues' later analysis of mortality attributable specifically to low-quality health systems, rather than to non-utilization of care altogether, adds an important nuance: in many low- and middle-income countries, a large share of maternal and newborn deaths occur among women who did reach a health facility but received care that was itself inadequate, meaning that access alone — the traditional metric used to judge health-system performance — substantially understates the problem [14]. This finding bears directly on how community-based interventions should be understood: their job is not only to get women to a facility, but, in the interim, to improve the quality of care and decision-making that happens before a facility is ever

reached, and to make the facility referral, when it happens, more timely and better informed.

Filippi and colleagues situate this pattern within a broader structural account of poverty, arguing that maternal deaths in poor countries cannot be fully understood, or addressed, as a narrowly clinical problem; they are also a problem of transport infrastructure, of household decision-making power (frequently not held by the pregnant woman herself), of the direct and indirect costs of seeking care, and of a health workforce that is thin and unevenly distributed even where facilities nominally exist [15]. This is the structural gap that community-based interventions are designed to occupy: not a replacement for facility-based obstetric care, which nothing in this literature suggests is dispensable, but a mechanism for reaching households that a facility-centred strategy alone reaches too late, or not at all. Campbell and Graham's companion analysis in the same Lancet Maternal Survival Series frames the resulting strategic choice plainly — get on with what already works, at scale, rather than wait for a single definitive intervention, and community mobilisation is one of the components of "what works" that this article takes as its subject [4].

3. Community Health Worker Models and Home-Based Care

The community health worker and home-visiting literature has the longest trial history in this field, and its foundational results remain among the most frequently cited in global health. Bang and colleagues' field trial of home-based neonatal care in Gadchiroli, a rural, largely tribal district in Maharashtra, India, trained local women as community health workers to conduct structured home visits during pregnancy and the neonatal period, managing neonatal sepsis with a standardized protocol rather than referring every suspected case to a distant facility that most families could not reasonably reach in time [5]. Over three years of intervention, the study area recorded a substantial fall in the neonatal mortality rate relative to a comparison area, and the trial is widely credited with establishing, empirically rather than merely theoretically, that appropriately trained community-level workers operating largely outside the formal facility system could meaningfully reduce neonatal deaths in a high-mortality rural setting.

Subsequent cluster-randomised trials tested variations on this model in different South Asian contexts. Kumar

and colleagues' Saksham trial in Shivgarh, Uttar Pradesh, evaluated a package of community-based behaviour-change interventions — promoting clean cord care, thermal care (skin-to-skin contact and delayed bathing), and early and exclusive breastfeeding — delivered through home visits and community mobilization rather than clinical treatment of sepsis *per se*, and reported a substantial reduction in neonatal mortality in the intervention clusters relative to control by the trial's third year [8]. Baqui and colleagues, working in Sylhet district, Bangladesh, took a more explicitly comparative design, testing two different service-delivery strategies for the same community-based newborn-care package — a "home-care" arm in which community health workers delivered the full package via home visits, and a "community-care" arm relying more on group education and community mobilization without the same intensity of individual home visiting — against a comparison area receiving neither [7]. The home-care arm produced a clear and statistically significant reduction in neonatal mortality by the trial's later years; the community-care arm did not achieve statistical significance over the same period, a result the authors and subsequent commentators have read as evidence that the intensity and individualization of contact, not merely the community orientation of the intervention, matters a good deal for this particular class of newborn-survival interventions.

Table 1: Reported neonatal mortality effects from major cluster-randomised trials of community-based interventions in underserved regions, spanning home-visiting and women's-group designs.

Trial (location)	Design	Reported neonatal mortality effect	Source
Gadchiroli, India	Home-based neonatal care, community health workers	Substantial fall in NMR over 3 years vs. comparison area	Bang et al. [5]
MIRA Makwanpur, Nepal	Women's groups, participatory learning and action	Adjusted OR 0.70 (95% CI 0.53-0.94)	Manandhar et al. [6]
Shivgarh, India (Saksham)	Community behaviour-change, home visits	Marked reduction in NMR by year 3	Kumar et al. [8]
Sylhet, Bangladesh	Home-care vs. community-care arms	Significant reduction, home-care arm only	Baqui et al. [7]
Ekjut, Jharkhand & Orissa, India	Women's groups, participatory learning and action	Adjusted OR 0.68 (95% CI 0.59-0.78)	Tripathy et al. [18]

Trial (location)	Design	Reported neonatal mortality effect	Source
Newhints, Ghana	Community volunteers, home visits	No significant NMR effect despite improved practices	Kirkwood et al. [9]

Kirkwood and colleagues' Newhints trial in Ghana is a useful and somewhat sobering counterpoint. Newhints tested a structurally similar home-visits intervention — community-based surveillance volunteers identifying pregnancies and newborns, and trained workers conducting scheduled home visits to promote essential newborn-care practices and identify danger signs — in a different West African setting, and found improvements in reported care practices but no statistically significant reduction in the neonatal mortality rate itself [9]. Read alongside the South Asian trials, Newhints is a reminder that this class of intervention does not automatically replicate its effect size, or even its statistical significance, when moved to a different health system, population density, and baseline mortality context; the mechanism (better-informed households, earlier recognition of danger signs, more consistent essential newborn care) may still operate, but whether it translates into a detectable mortality effect appears to depend on factors — baseline care-seeking behaviour, distance to functioning referral facilities, the underlying cause structure of local neonatal deaths — that are not yet fully mapped by the trial literature.

Gogia and Sachdev's systematic review and meta-analysis of home-visit interventions delivered by community health workers pooled results across a substantial number of these and related trials and found a statistically significant, moderate-sized reduction in neonatal mortality associated with structured home-visiting programmes, alongside considerable heterogeneity in effect size across studies that the authors attribute partly to differences in visit frequency, timing relative to birth, and the specific content of the home-visit package [16]. Bhutta and colleagues' earlier, broader review of community-based interventions for perinatal and neonatal health outcomes reached a structurally similar conclusion across an even wider evidence base, ranking specific intervention components (clean delivery practice, thermal care, breastfeeding promotion, case management of neonatal infection) by the strength of the supporting trial

evidence and explicitly flagging community-based case management of neonatal sepsis, in settings where facility referral is genuinely difficult, as one of the more strongly evidenced components [12]. Darmstadt and colleagues' companion modelling analysis went a step further, estimating that scaling up a defined package of evidence-based, largely community-deliverable interventions could avert a substantial share of the roughly four million annual neonatal deaths existing at the time of their analysis, translating the trial-level evidence into a population-level cost-effectiveness argument for investment in this class of programme [17].

4. Women's Groups and Participatory Learning and Action

A structurally distinct, though closely related, strand of the community-intervention literature centres not on individual home visits by a paid or volunteer health worker, but on community mobilization through women's groups practising a specific facilitation method known as participatory learning and action (PLA). In the canonical PLA cycle, a trained local facilitator convenes a group of women, typically monthly, to work through a structured process: identifying and prioritizing local maternal and newborn health problems, collectively developing and implementing strategies to address them (which might include community-level fundraising for emergency transport, birth-preparedness planning, or peer pressure to seek antenatal care), and then evaluating what worked before beginning the cycle again. The method is deliberately low-cost and community-owned rather than centred on a single trained outsider delivering a fixed curriculum.

Manandhar and colleagues' MIRA Makwanpur trial in rural Nepal was the first large cluster-randomised trial to test this model rigorously, randomising 42 geographic clusters (involving more than 28,000 women) to either women's-group facilitation or standard care, and reporting a substantial and statistically significant reduction in the neonatal mortality rate in intervention clusters relative to control, alongside a reduction, though a less statistically robust one given the smaller number of events, in maternal mortality [6]. The trial's result was influential well beyond its immediate setting, in part because the intervention's estimated cost per averted death compared favourably with many facility-based alternatives, and in part because the mechanism it proposed — mobilizing existing

community social structures rather than importing new paid personnel — appeared, in principle, more sustainable and more readily adapted to other rural, low-resource settings.

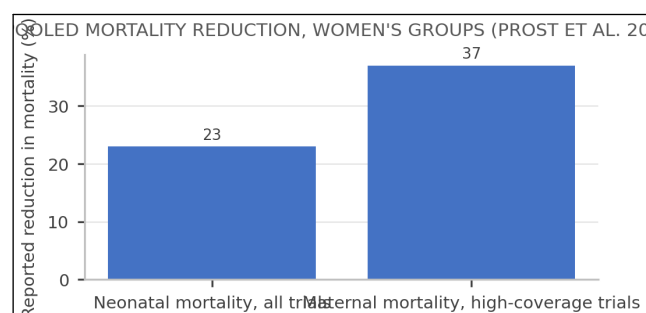


Figure 1: Pooled effect of women's groups practising participatory learning and action on neonatal mortality across all trials, versus on maternal mortality restricted to trials with high population coverage (>30% of pregnant women participating), as reported in Prost et al.'s systematic review and meta-analysis [10].

Tripathy and colleagues' Ekjut trial, conducted across tribal and rural populations in Jharkhand and Orissa, India, replicated and extended the Nepal design, using community health workers as group facilitators rather than external staff, and reported a substantial reduction in neonatal mortality by the trial's later years, with the effect notably concentrated among the most socioeconomically disadvantaged clusters — the population, in other words, for whom facility-based alternatives were least accessible to begin with [18]. Rosato and colleagues, drawing on the Nepal, India, and related trial experiences together, distilled a set of broader lessons about what makes community participation work as a maternal and newborn health strategy: genuine local ownership of the problem-identification process, sustained rather than one-off engagement, and explicit attention to linking group-identified problems (for instance, lack of affordable emergency transport) to concrete, community-resourced solutions rather than leaving problems named but unaddressed [19].

Subsequent trials tested whether the women's-group model could be scaled beyond its original efficacy-trial settings without losing effectiveness. Fottrell and colleagues' cluster-randomised trial in Bangladesh specifically tested the effect of increasing population coverage of an existing women's-group programme — that is, whether expanding the proportion of pregnant women in a given area who participated in groups, rather than simply running groups at a fixed low intensity, produced additional mortality benefit — and

found that higher-coverage clusters achieved a significantly larger reduction in neonatal mortality than lower-coverage clusters running the nominally identical programme [20]. Nahar and colleagues' companion process analysis of the same Bangladesh scale-up documented the practical, unglamorous work required to achieve that higher coverage — recruiting and retaining group facilitators, sustaining group attendance over years rather than months, and adapting group content to remain relevant as an area's baseline maternal and newborn health literacy improved over the life of the programme — work that a headline mortality statistic does not, on its own, make visible [21].

Colbourn and colleagues' MaiKhanda trial in Malawi combined the women's-group community-mobilization model with simultaneous quality-improvement work inside health facilities, explicitly testing whether the two strategies together outperformed either alone, and reported reductions in perinatal mortality associated with the combined and facility-focused arms that were larger and more consistent than the community-mobilization arm operating on its own [13]. This result anticipates a theme this article returns to in its concluding sections: the women's-group literature's strongest results tend to come from settings and trial designs where community mobilization operates alongside, rather than instead of, a minimally functioning referral and facility system — the community intervention appears to work best at converting an available (if imperfect) facility system into one that underserved households actually use in time, rather than at substituting for a facility system that barely exists.

5. Facility Linkage, Referral, and the Limits of Community-Only Strategies

None of the mortality reductions documented above occur through community action alone; they occur, mechanistically, through households making different decisions — recognizing a danger sign earlier, choosing to deliver with a trained attendant, seeking emergency care sooner — that ultimately still depend on some functioning point of clinical contact existing to receive that decision. This is the single most consistent caveat across the trial literature synthesized here, and it is worth stating plainly rather than leaving implicit: community-based interventions demonstrably improve care-seeking behaviour and, in a substantial share of the

trials reviewed, reduce mortality, but they operate as a demand-side and early-recognition intervention layered onto whatever supply-side capacity already exists, not as a substitute for that capacity.

More and colleagues' community-mobilization trial in the urban slums of Mumbai makes this interdependence especially visible because it operated in a setting with, in principle, far better facility access than the rural trials discussed above; the intervention nonetheless produced meaningful improvements in perinatal care-seeking and outcomes by addressing a different bottleneck — awareness, timing, and household decision-making around care that was geographically accessible but was not, absent the intervention, being used effectively or in time [22]. This is a useful complement to the rural evidence base: it suggests the community-mobilization mechanism is not solely a response to physical distance from care, but more generally a response to informational and social barriers to using care that exists.

Baqui and colleagues' Sylhet finding that the home-visiting arm outperformed the community-mobilization-only arm on neonatal mortality, discussed above, and Kirkwood and colleagues' null mortality result in Ghana despite improved reported care practices, together suggest that "community-based" is not a single intervention with a single expected effect size, but a family of designs whose effectiveness depends heavily on local implementation intensity, the underlying quality and reachability of the facility system the community is being encouraged to use, and the specific cause structure of local maternal and neonatal deaths [7,9]. Bhutta and colleagues' later synthesis, assessing what package of interventions could plausibly avert the largest share of remaining preventable maternal, newborn, and stillbirth deaths at the lowest cost, explicitly frames community-based demand-generation and health-worker case-management as one tier of a multi-tier strategy that must be paired with strengthened referral pathways and facility-based emergency obstetric and newborn care to reach its full potential; community intervention alone, in their modelling, leaves a substantial and irreducible share of preventable deaths unaddressed [23].

Renfrew and colleagues' evidence-informed framework for maternal and newborn care reinforces the same conclusion from a workforce-planning angle, arguing

that a skilled, appropriately supported midwifery workforce operating within a functioning referral system is the element that ultimately determines whether earlier and better-informed care-seeking, however effectively a community intervention generates it, translates into a survived pregnancy and delivery [24]. Prata and colleagues, writing specifically about resource-poor settings where skilled birth attendance and emergency obstetric care remain genuinely scarce rather than merely underused, argue for a frank acknowledgment that community-level interventions, however well evidenced, cannot close the gap left by an absent or non-functional facility tier on their own, and that policy discussions of "what works" in community mobilization risk overstating the technique's reach if this dependency is left unstated [25]. Read together, this body of work supports treating community-based intervention not as an alternative maternal-survival strategy to facility strengthening, but as the demand-side half of a strategy whose supply-side half — referral transport, functioning emergency obstetric units, an adequately staffed and skilled birth-attendant workforce — has to be built, or at minimum kept from deteriorating further, in parallel.

6. Evidence Synthesis: What the Meta-Analyses and Systematic Reviews Show

Individual trial results, however carefully conducted, are vulnerable to context-specific factors that a single study cannot separate from the intervention's true average effect. The systematic reviews and meta-analyses in this literature exist precisely to address that limitation, and their conclusions are worth treating as the most load-bearing evidence in this synthesis.

Prost and colleagues' systematic review and meta-analysis of women's groups practising participatory learning and action remains the single most influential quantitative synthesis in this specific literature [10]. Pooling results across the available cluster-randomised trials of the PLA women's-group model, including the Nepal, India, and Bangladesh trials discussed above, the review reported a significant reduction in neonatal mortality across trials generally, and, in the subset of trials where population coverage of the intervention exceeded a threshold of roughly a third of pregnant women in a given area, a substantially larger reduction in both neonatal and maternal mortality than in lower-coverage trials — a maternal-mortality effect

that did not reach statistical significance when lower-coverage trials were included in the pooled estimate. This coverage-threshold finding is, in our reading, the single most policy-relevant result in the entire literature synthesized in this article: it reframes the practical question facing programme designers away from "should we run women's groups" and toward "can we realistically achieve and sustain high population coverage," since the evidence suggests the mortality benefit is concentrated specifically among programmes that clear that bar.

Lassi and Bhutta's Cochrane review of community-based intervention packages for reducing maternal and neonatal morbidity and mortality took a broader inclusion criterion, encompassing home-visiting, women's-group, and combined community-mobilization designs together, and reached a structurally similar conclusion: community-based intervention packages, considered as a class, are associated with statistically significant reductions in neonatal mortality and in maternal morbidity outcomes, with the strength of evidence for maternal mortality specifically somewhat weaker than for neonatal mortality, reflecting both the rarer event rate for maternal death (which limits statistical power even in large cluster trials) and the genuinely more complex causal pathway between community awareness and survival of an acute obstetric emergency [11]. This asymmetry between the neonatal and maternal mortality evidence bases recurs throughout the literature and is worth naming plainly rather than glossing over: neonatal deaths are more common, more often attributable to causes (infection, prematurity-related complications, birth asphyxia) that respond relatively directly to improved home-based care practices and earlier recognition, while maternal deaths cluster around acute intrapartum emergencies — haemorrhage, obstructed labour, eclampsia — where the community intervention's contribution is almost entirely mediated through getting the woman to functioning emergency obstetric care fast enough, a pathway with more points at which the chain can still fail even when the community-level intervention performs exactly as designed.

Kruk and colleagues' broader health-systems analysis adds an important corrective to how these pooled effect sizes should be read at the population level: because a

meaningful share of maternal and newborn deaths occurs among women who did reach a facility but received substandard care once there, the ceiling on what any purely community-based, demand-generation intervention can achieve is bounded by the quality of the facility system it feeds into, a ceiling that varies enormously across the countries and health systems in which these trials have been conducted [14]. Taken together, the systematic review evidence supports three claims with reasonable confidence: community-based interventions, and women's groups practising participatory learning and action specifically, produce real and replicated reductions in neonatal mortality across a range of South Asian and, with somewhat more heterogeneous results, sub-Saharan African settings; the maternal-mortality effect, while real in high-coverage implementations, is less consistently demonstrated and appears conditional on achieving and sustaining substantial population coverage; and the magnitude of any mortality effect, for both outcomes, is partly a function of the facility-based referral system's underlying capacity rather than of the community intervention's design alone.

7. Open Challenges

Several gaps recur across the literature synthesized here and deserve to be named plainly rather than left implicit. First, generalizability across health systems: the strongest and most consistently replicated results come from a relatively small number of rural South Asian settings — Nepal, Jharkhand and Orissa, Bangladesh — with the sub-Saharan African evidence base, exemplified by Kirkwood and colleagues' null result in Ghana and the more mixed MaiKhanda findings from Malawi, showing considerably more heterogeneity in whether a structurally similar intervention produces a detectable mortality effect [9,13]. Whether this reflects genuine differences in the underlying cause structure of neonatal and maternal deaths across regions, differences in baseline facility capacity, or simply differences in implementation fidelity across trials run by different research teams in different health systems is not yet fully resolved by the existing evidence base, and more head-to-head, harmonized-design trials across regions would help settle the question.

Second, the population-coverage threshold that Prost and colleagues identify as central to the maternal-mortality effect is, so far, an empirical pattern

observed across existing trials rather than a mechanistically well-understood dose-response relationship with a clearly specified minimum [10]. Programme implementers scaling up a women's-group intervention need to know not just that higher coverage helps, but roughly how much coverage is required, how quickly it needs to be achieved, and how it should be measured and monitored in real time during a scale-up — questions the trial literature, largely conducted at fixed, researcher-controlled coverage levels, was not designed to answer with precision.

Third, cost-effectiveness evidence, while present in this literature, is uneven in its methodology and reporting, with some trials reporting detailed cost-per-averted-death figures and others reporting programme costs without a comparable mortality-effect denominator, making cross-study comparison of value-for-money harder than the underlying mortality evidence would otherwise support. Fourth, sustainability beyond the trial period: most of the cluster-randomised evidence base reports outcomes measured during an active, externally supported trial, and considerably less evidence exists on whether women's-group coverage, facilitator retention, and the resulting mortality benefit persist once external research funding and monitoring end and responsibility shifts fully to routine government health-system delivery — precisely the transition that determines whether a positive trial result becomes a durable public-health gain or a time-limited research artifact.

Fifth, and perhaps most fundamental, is the difficulty of cleanly separating a "pure" community-intervention effect from simultaneous, often unmeasured improvements to the surrounding health system during the same study period — improvements in road infrastructure, mobile-phone-based emergency communication, or facility staffing that may occur independently of, but concurrently with, a community-mobilization trial, and that the cluster-randomised design controls for only insofar as such changes are evenly distributed between intervention and control clusters. We do not think any of these gaps undermine the core conclusion that community-based interventions, and women's groups specifically, belong in maternal and newborn survival strategy; the consistency of the neonatal-mortality effect across multiple, independently conducted trials in

different countries is too strong to dismiss. But the gaps above are the honest state of the evidence, and claims of a fixed, portable "recipe" for community-based maternal mortality reduction should be read with these open questions in mind.

8. Conclusion

The literature reviewed here supports a reasonably specific set of conclusions rather than a single sweeping claim. Community-based interventions for maternal and newborn health — structured home visiting by trained community health workers, and community mobilization through women's groups practising participatory learning and action in particular — produce real, replicated reductions in neonatal mortality across a substantial number of independently conducted cluster-randomised trials in underserved rural and, to a lesser but still meaningful extent, urban settings [5,6,18,7,8,10]. The evidence for a maternal-mortality effect specifically is real but more conditional, concentrated in trials and programme implementations that achieve substantial population coverage, and mediated throughout by the capacity of the facility-based referral system the community intervention ultimately feeds into [10,11,14].

These interventions earn their place in maternal survival strategy not because they are a cheaper substitute for facility-based obstetric care — the evidence reviewed here does not support that reading — but because they address a genuine and otherwise unaddressed gap: the period before a woman in an underserved region ever reaches a facility, during which earlier recognition of danger signs, better-informed household decision-making, and community-level preparedness for obstetric emergencies can be the difference between a survivable complication and a fatal one [15,19]. Making that contribution durable, rather than a one-off research finding, depends on treating community mobilization as inseparable from the health-system strengthening it is meant to complement: sustained facilitator support and population coverage once external trial funding ends, referral pathways and emergency obstetric capacity that are actually functional when a community-identified emergency arrives at their door, and an honest, continually updated accounting of where the community-only intervention's reach still falls short [24,23,25]. Read together, the consistency with which independently conducted trials across multiple

countries and decades have converged on broadly similar findings is, in our view, the strongest available evidence that community-based intervention is not a one-off research artifact but a durable, evidence-supported component of the strategy needed to close the remaining gap in maternal and newborn survival in the world's most underserved regions.

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Conflict of Interest

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organizations conducting the trials discussed that could be perceived as influencing the synthesis presented here.

Data Availability Statement

This article is a literature synthesis and did not generate new primary data. All studies discussed are cited in the reference list, and readers seeking underlying trial data, individual participant data, or statistical code should consult the original publications and their own data availability statements, several of which describe repository deposits or data-sharing arrangements negotiated with the relevant national research ethics bodies.

Ethical Approval

Not applicable. This article did not involve the recruitment of human participants, animal subjects, or the collection of primary clinical data; it draws exclusively on previously published, peer-reviewed research, each of which reports its own ethical approval and informed-consent procedures in the original publication.

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