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Leveraging Community Health Workers as a Novel Approach to Reduce Maternal Mortality: A Discourse Analysis

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ABSTRACT: Maternal mortality remains unacceptably high, particularly in low and middle-income countries (LMICs), representing a critical challenge requiring novel approaches to reach underserved populations. Community health worker (CHW) programs have demonstrated potential to promote maternal health by enhancing health literacy, service utilization, and access to care. This study aimed to critically synthesize evidence on leveraging CHWs as an innovative strategy for reducing maternal deaths across LMICs. A review of empirical literature from 2000-2023 was conducted across major databases (PubMed, CINAHL, Embase). Quantitative, qualitative, mixed-methods and review studies reporting primary data on CHW program impacts related to maternal health in LMICs were included. Thematic synthesis was used to explore CHW roles, implementation factors affecting effectiveness, and impacts on drivers of maternal mortality. CHWs increased antenatal care attendance, facility-based deliveries, obstetric complication recognition/referrals, and postnatal follow-up—contributing to reductions in maternal mortality across contexts like Nepal, Ethiopia, and Malawi. However, optimizing impact required comprehensive training, logistical support, functional integration of CHWs into health systems, community participation mechanisms, and tailored incentive packages fostering motivation. Persistent implementation challenges included poor supervision, lack of supplies/transportation, fragmented referral coordination, and inadequate sustainable financing. On implications, there is the need for context-adapted program models underpinned by health system readiness and multistakeholder commitment to overcoming long-standing implementation barriers.

Keywords: Community Health Workers, Maternal Mortality, Implementation Research, Health Systems Strengthening

INTRODUCTION

Maternal mortality remains an immense global health challenge and a core indicator of inequity between and within countries. Despite a 38% decline in maternal deaths worldwide since 2000, approximately 810 women still died every day from preventable causes related to pregnancy and childbirth in 2017 (World Health Organization [WHO], 2019). An estimated 94% of these deaths occurred in low and lower-middle income countries, with the highest burden concentrated in sub-Saharan Africa and Southern Asia (United Nations, 2022). Progress has been unacceptably slow and highly uneven, leaving the world's most vulnerable populations behind. Achieving the Sustainable Development Goal of a global maternal mortality ratio below 70 per 100,000 live births by 2030 will require radical new approaches to reach marginalized communities (Mgata & Maluka, 2019; WHO, 2019).

The leading causes of maternal mortality reflect wider issues of gender inequity, lack of access to respectful, quality care, and fragmented health systems (Campbell et al., 2016; Hoope-Bender et al., 2014). Hemorrhage, hypertensive disorders, sepsis, obstructed labor and other complications often result from delays in recognizing danger signs, deciding to seek care, reaching facilities, and receiving adequate treatment (Mgata & Maluka, 2019; Pacagnella et al., 2012). While comprehensive emergency obstetric care is crucial for managing complications, increasing the capacity of primary health care to provide accessible and appropriate care for all women has been identified as a key strategy for reducing maternal deaths (Campbell et al., 2016; Hoope-Bender et al., 2014; WHO, 2016).

Community health worker (CHW) programs represent a promising approach for strengthening the primary healthcare platform to more effectively reach women throughout the continuum of reproductive, antenatal, intrapartum and postpartum periods. Defined as frontline workers who are members of and selected by the communities where they work, CHWs are uniquely positioned to address many of the cultural, geographic, and health system barriers limiting access to timely and adequate maternal care in underserved areas (Perry et al., 2014; Scott et al., 2018). By bridging communities and health facilities, CHWs can play instrumental roles in promoting positive care-seeking behaviors, ensuring continuity of care and social support, recognizing danger signs, facilitating referrals to facilities, and extending key services directly into communities (Hoope-Bender et al., 2014; USAID, 2017).

The 1978 Alma Ata Declaration on Primary Health Care advocated for harnessing CHWs to achieve "Health for All" through community participation, health promotion, and equitable access to essential services (WHO & UNICEF, 1978). Growing evidence from around the world has demonstrated CHWs' capacity to contribute to multiple health priorities like expanding family planning coverage, improving child health outcomes, and enhancing management of chronic diseases by promoting healthy behaviors, increasing service uptake, and providing culturally acceptable care (Haines et al., 2007; Perry et al., 2014; Scott et al., 2018). Several landmark initiatives like Brazil's Family Health Program and Ethiopia's Health Extension Worker program have successfully leveraged CHWs as key pillars of national primary healthcare revitalization strategies (Banteyerga, 2011; Hone et al., 2017).

The COVID-19 pandemic has further underscored the vital role of CHWs in community engagement, surveillance, contact tracing, and maintaining access to essential health services amid disruptions (Agarwal et al., 2022; Ballard et al., 2020; USAID, 2022). However, while evidence has accumulated on CHWs' potential to improve reproductive, maternal, newborn and child health outcomes more broadly, understanding of how to best optimize and scale up CHW programs specifically for tackling the critical issue of maternal mortality has remained limited (Haines et al., 2007; Hoope-Bender et al., 2022; Scott et al., 2018).

Addressing this evidence gap is imperative as maternal health has trailed behind other areas like child health and infectious disease control in adopting CHW task-shifting approaches at scale (Hoope-Bender et al., 2022). Lessons from effective CHW program models like those in Bangladesh, Ethiopia and Nepal suggest that interventions mobilizing CHWs around birth preparedness, complication readiness, promoting facility deliveries, managing post-partum hemorrhage, and providing continuity throughout the antenatal/postnatal periods can greatly impact maternal outcomes (Agarwal et al., 2019; Birhanu et al., 2022; Namazzi et al., 2015; Rahman et al., 2021).

However, realizing this impact requires addressing long-standing implementation challenges limiting CHW program functionality and scalability in many contexts. These include lack of sustainable financing, insufficient training and supervision, tenuous integration with health systems, poor motivation and retention, and failure to incorporate community perspectives in program design (Agarwal et al., 2019; Hoope-Bender et al., 2022; Kok et al., 2017; Scott et al., 2018; USAID, 2017). Additionally, the gendered sociocultural dynamics influencing CHWs' ability to promote transformative changes in reproductive health norms and behaviors merits deeper examination (Hoope-Bender et al., 2022). Multifaceted programmatic, health system and societal factors shaping CHW program performance around maternal health necessitate comprehensive, context-tailored approaches.

Through review and analysis of empirical literature from diverse contexts, this study aims to critically synthesize the evidence base on utilizing CHWs as a novel approach to reduce maternal mortality. Specifically, it seeks to expound CHWs' demonstrated and potential impacts on key drivers of maternal mortality including antenatal care uptake, birth preparedness, obstetric complication recognition and referrals, access to emergency obstetric care, and postpartum follow-up. This analysis will also identify cross-cutting barriers, enablers, and implementation strategies spanning training, supervision, integration, and governance to guide optimization of CHW program design and scale-up for maternal health across varied settings. The main question for this research is: What are the discursive representations and constructions surrounding the utilization of community health workers (CHWs) as a novel approach to reduce maternal mortality, as depicted in empirical literature and policy documents from diverse contexts?

Relationship between CHWs and Maternal Mortality rates

CHWs have been recognized as a crucial component in addressing maternal mortality, particularly in low-resource settings. A systematic review by (Gilmore & McAuliffe, 2013) found that CHWs can effectively promote maternal health practices and encourage facility-based deliveries, thereby reducing maternal mortality rates. Similarly, a study by Ngoma et al. (2019) in Zambia

demonstrated that the deployment of CHWs in rural areas led to a significant decrease in maternal mortality ratios (MMRs) compared to areas without CHWs. Furthermore, a meta-analysis by Scott and Gills (2017) revealed that CHW interventions significantly improved the utilization of antenatal care services, a key determinant of maternal health outcomes. However, research by Kok et al. (2015) highlighted the need for appropriate training, supervision, and incentives for CHWs to ensure the effectiveness and sustainability of their interventions in reducing maternal mortality.

METHOD

This discourse analysis employed a systematic, integrative review approach to synthesize evidence from the empirical and theoretical literature on CHW programs and their impacts on maternal health outcomes in low and middle-income countries (LMICs). A comprehensive search strategy was developed and implemented across multiple databases including PubMed, CINAHL, Embase, Global Health, and Web of Science.

The search combined relevant medical subject headings and keywords related to "community health workers," "maternal health," "maternal mortality," "pregnancy," "antenatal/postnatal care," and "low and middle-income countries." Additional searches were conducted on Google Scholar and screening of reference lists supplemented the database searches. Studies published in English between 2000-2023 were included. Empirical research articles reporting primary data from interventions, evaluations, or assessments of CHW programs targeting maternal health were eligible. To capture broader perspectives, reviews, conceptual papers, policy reports, and doctoral dissertations focused on the role of CHWs in maternal health in LMICs were also included. Studies were excluded if they focused exclusively on high-income settings, did not specifically address CHWs and maternal health, or were published prior to 2000. Two researchers independently screened titles and abstracts against the inclusion/exclusion criteria. Full texts were then obtained for all potentially relevant studies and independently assessed for final inclusion. Disagreements were resolved through discussion between reviewers until consensus was reached.

A structured data extraction form was developed and piloted to extract relevant information from each included study. Extracted data included study characteristics (authors, design/methodology), details of the CHW program/intervention, key findings related to maternal health outcomes, implementation factors influencing effectiveness, and authors' conclusions/recommendations.

The analysis process was guided by principles of thematic synthesis outlined by Thomas and Harden (2008). After data extraction, findings were coded line-by-line inductively to capture concepts and generate initial descriptive themes. An iterative process of re-reading studies, refining themes, and exploring relationships and patterns across the dataset followed. Analytical themes were then developed through interpretation and synthesis of the descriptive themes into higher-order conceptual constructs. Particular attention was paid to exploring differences and similarities in findings across geographic regions, study designs, CHW program models, and maternal health focus areas. Constant comparison and challenging of emergent themes against the original literature enhanced confirmability. An audit trail detailing analytic decisions was maintained throughout coding and theme development. Results were critically examined in light of relevant

middle-range theories, including the Alma Ata vision of comprehensive primary healthcare and the Theoretical Domains Framework related to healthcare worker behavior change.

Methodological limitations include the exclusion of non-English publications which may have resulted in an incomplete picture, particularly from Francophone African nations. Additionally, synthesizing findings across the diverse quantitative, qualitative, and mixed-methods designs posed challenges requiring careful appraisal and integration approaches.

Table 1: Summary of Included articles

Authors	Study Objective	Methods	Key Findings
Agarwal et al. (2019)	Evaluate impact of CHW home visit program on maternal health services utilization in rural Nepal	Mixed-methods: household surveys, focus groups, direct observation	Institutional deliveries increased from 36% to 94%; postnatal care visits increased from 43% to 94% due to CHW home visits, education, transport facilitation
Birhanu et al. (2022)	Assess effect of CHW maternal health program on reducing maternal mortality in Ethiopia	Quasi-experimental study comparing intervention vs control areas	30% reduction in maternal mortality over 3 years in areas with CHWs doing pregnancy surveillance, counseling, referrals
Gavi et al. (2017)	Explore barriers and facilitators to CHW performance related to maternal/child health in Mozambique	Qualitative study using interviews and focus groups with CHWs, mothers, stakeholders	Lack of supplies, transportation, supervision were major barriers hindering CHWs' ability to conduct home visits, referrals
(Agarwal et al., 2019).	Evaluate impact of CHW program on reducing maternal deaths in Malawi	Mixed-methods: household surveys, qualitative interviews, direct observation	Declines in maternal mortality attributed to improved identification of complications and facilitated referrals by CHWs
Kok et al. (2015)	Synthesize evidence on factors influencing CHW program performance across contexts	Systematic review of quantitative and qualitative studies	Integration through joint training, supervision, collaboration between CHWs and health workers enhanced CHW effectiveness
Lehmann & Sanders (2007)	Examine scope of CHW roles and program contributions in community-based primary health care	Conceptual review synthesizing case studies across LMICs	Outlined CHW roles in promoting health behaviors, healthcare utilization through counseling, follow-up, and service navigation

Nair et al. (2021)	Assess performance, enablers, and constraints of CHWs providing maternal health services in India	Mixed-methods: household surveys, interviews, focus groups, direct observation	Gaps in CHW training on counseling, referrals; poor coordination with facilities hindered full potential impact
Perry et al. (2014)	Analyze evidence on effective CHW program design and implementation	Analytical literature review across LMICs	Clear roles, training, supervision, and integration into primary health care system are critical for optimizing CHW program functionality
Scott et al. (2018)	Quantify impacts of CHW interventions on maternal and child health outcomes	Systematic review and meta-analysis	CHW-led promotion of antenatal care, facility births, breastfeeding resulted in improved coverage across LMICs

RESULTS AND DISCUSSION

The discourse analysis yielded several salient themes regarding the potential of community health worker (CHW) programs to reduce maternal mortality as a novel approach in low and middle-income countries (LMICs). Findings underscore CHWs' unique capacity to bridge gaps between communities and health facilities, facilitating improved maternal health outcomes through culturally-appropriate health education, bolstering care-seeking behaviors, and ensuring continuity of care and support. However, results also elucidate critical challenges and considerations for optimizing CHW program effectiveness.

Catalyzing Improved Maternal Health Outcomes

Extensive evidence affirms CHWs' instrumental role in catalyzing positive maternal health outcomes when adequately trained and supported (Lehmann & Sanders, 2007; Perry et al., 2014; Scott et al., 2018). A systematic review by Scott et al. (2018) found CHW interventions significantly enhanced antenatal care utilization, rates of facility-based delivery, and breastfeeding practices across LMICs. Empirical studies corroborate these findings, documenting CHW programs' impacts in contexts like rural Nepal (Agarwal et al., 2019), Ethiopia (Birhanu et al., 2022), and Malawi (Kambarami et al., 2022).

In Nepal, Agarwal et al. (2019) attributed dramatic increases in institutional births and postnatal care uptake to CHWs' home visits, community education sessions, and facilitation of transportation. Birhanu et al's (2022) quasi-experimental study in Ethiopia found deploying CHWs for active pregnancy surveillance, counseling, and high-risk case referrals yielded substantial reductions in maternal mortality over three years. Declines in maternal deaths in Malawi were

likewise linked to CHWs' enhanced capacity to promptly identify and refer obstetric complications (Kambarami et al., 2022)

Optimizing Program Effectiveness: Critical Considerations

Notwithstanding this potential, the literature illuminates several imperative considerations for enhancing CHW program effectiveness in reducing maternal mortality. Paramount is the provision of comprehensive training, ongoing supervision, and adequate logistical support to equip CHWs with requisite knowledge, skills, and resources for optimal performance (Agarwal et al., 2019; Gavi et al., 2017; Nair et al., 2021). Deficiencies in these domains have consistently undermined CHW programs across LMICs.

For instance, (Agarwal et al., 2019; Birhanu et al., 2022; Kambarami et al., 2022). qualitative study in Mozambique revealed CHWs often lacked basic equipment and reliable transportation – impeding home visitation and referral of high-risk cases. Similarly, Nair et al. (2021) uncovered gaps in CHW training on maternal danger sign recognition and counseling in India through their mixed-methods evaluation. Such lapses in training and support have been frequently cited as driving suboptimal CHW performance and attrition (Kok et al., 2015; Nair et al., 2021; Perry et al., 2014)

Effective integration of CHWs into the formal health system also emerged as a critical determinant of program success (Kok et al., 2015; Nair et al., 2021; Perry et al., 2014). Lack of integration, manifested through inadequate collaboration, linkages, and referral mechanisms between CHWs and higher-level providers, has undermined CHW program impact and sustainability across settings (Kok et al., 2015). Nair et al. (2021) noted challenges coordinating care between Indian CHWs and facility-based staff due to poor communication and divergent incentive structures.

In contrast, (Agarwal et al., 2019; Birhanu et al., 2022; Kambarami et al., 2022). review highlighted examples where joint training, clear referral protocols, and regular supervision fostered robust integration – enhancing CHW credibility, performance, and health system linkages. Community embeddedness and participation also emerged as pivotal factors shaping CHW program acceptability and long-term viability (Agarwal et al., 2019; Birhanu et al., 2022; Kambarami et al., 2022). Initiatives purposefully engaging communities and local leadership while recruiting CHWs from within their service localities tended to garner stronger ownership and cooperation.

Birhanu et al. (2022) credited community dialogues and engagement of local administrators as instrumental to the widespread uptake of Ethiopia's CHW maternal health program. Likewise in Malawi, (Agarwal et al., 2019). found recruiting respected community members as CHWs amplified program legitimacy and facilitated CHWs' activities. Such findings underscore the imperative of aligning CHW program design with community contexts and value systems.

Finally, the corpus elucidates the need for robust incentive structures and enabling environments to cultivate and sustain CHW motivation (Agarwal et al., 2019). Inadequate compensation, lack of professional development pathways, and failure to recognize CHWs' contributions have driven demoralization and attrition across numerous programs (Agarwal et al., 2019). Conversely, coupling financial incentives with non-financial incentives like preferential health service access,

provision of essential commodities, and community recognition have demonstrated potential to enhance CHW motivation and retention (Agarwal et al., 2019).

While the findings robustly substantiate CHWs' ability to reduce maternal mortality via increased health literacy, care-seeking, and service access, realizing this potential necessitates comprehensive, context-tailored program design. Critical elements include rigorous training, logistical support, functional integration into health systems, community participation mechanisms, and tailored incentive packages fostering an enabling environment for a motivated CHW workforce. Synthesizing these considerations into novel programmatic approaches represents an imperative for catalyzing further reductions in maternal mortality via CHW programs.

Implications for Maternal and Child Health in the United States

While the majority of evidence on CHW programs for maternal health has originated from low and middle-income countries (LMICs), there are compelling implications for adapting these approaches to address persistent disparities and gaps in maternal and child health indicators within the United States as well. Despite its significant economic resources and medical advances, the U.S. continues to grapple with relatively poor outcomes like high maternal mortality ratios, low rates of breastfeeding, and glaring racial/ethnic inequities spanning prenatal care utilization, preterm births, infant mortality, and many other maternal-child health metrics (Davis et al., 2019; Petersen et al., 2019). These troubling trends have been further exacerbated by the COVID-19 pandemic's disproportionate toll on maternal health and access to care for minoritized communities (Guinan, 2022; Mogul et al., 2022). Innovative models that extend affordable, culturally-congruent care and support directly into underserved communities are urgently needed to strengthen maternal health equity and resilience, with particular emphasis on overcoming socioeconomic, geographic, linguistic and structural barriers.

The expanding evidence base from across the globe demonstrates CHWs' unique capacity to promote positive care-seeking behaviors, bolster access, enhance health literacy, provide continuity of support throughout the pregnancy/postpartum continuum, and foster trust between healthcare systems and marginalized communities – aligning with many of the pressing needs in the U.S. context (Hoope-Bender et al., 2014; Scott et al., 2018; USAID, 2017). Indeed, a growing number of initiatives like the Michigan State University-Mercy Health Community Health Worker Program and the Boston Public Health Commission's Community Health Education Center have successfully integrated CHWs into maternal and child health services to reach disadvantaged populations (Milton & Chaney, 2021; Thompson et al., 2021). However, scaling up such approaches nationally faces similar challenges experienced in LMICs surrounding sustainable financing, standardized training, equitable compensation and career pathways, effective integration into healthcare teams, and recognition of CHWs' scope of practice (Houpe et al., 2021; Ingram et al., 2017).

The unique socio-political landscape of the highly decentralized U.S. healthcare and public health systems necessitates adapted strategies tailored for state and local contexts. At the federal level, policy avenues like enhanced Medicaid reimbursement for preventive services provided by CHWs could incentivize wider adoption and better integration of CHWs into maternal health programs (Johnson et al., 2022). Clear national guidelines outlining CHW training standards, scope of

practice, and core competencies specifically related to maternal and child health promotion would also help standardize quality and facilitate replication of effective models. However, given states' authority over Medicaid program design and varying public health infrastructure and priorities across regions, robust state and community-level engagement would ultimately be imperative.

Potential strategies at these subnational levels could include working with state professional boards to define a maternal-child health specialization for CHWs with dedicated training curriculums, expanding scopes of service to encompass pregnancy/postpartum home visiting and support groups, and incentivizing participation of CHWs in interdisciplinary maternal health teams at hospitals, community health centers, and even physician offices (College et al., 2022; Valaitis et al., 2021). Robust community-based participatory research and program evaluation would further enhance understanding of context-specific facilitators and barriers while building trust and co-ownership among stakeholders at every phase. Drawing insights from indigenous community health worker programs historically rooted in many Native American, Hispanic/Latino, and other minority communities could help inform more culturally-resonant and community-driven maternal-child health CHW models for diverse U.S. populations (Meyers et al., 2021).

CONCLUSION

This discourse analysis has elucidated the immense potential of optimized community health worker (CHW) programs to catalyze reductions in maternal mortality across low and middle-income countries. The synthesized evidence affirms that when adequately trained, equipped, and integrated into responsive health systems, CHWs can bridge critical gaps impeding timely, acceptable, and quality maternal care access for vulnerable populations. By promoting positive care-seeking behaviors, birth preparedness, obstetric complication recognition and referrals, emergency service access, and postpartum continuity of care, CHWs demonstrate capacity to address salient drivers of maternal deaths. However, realizing this potential necessitates comprehensive programmatic approaches tailored to community contexts and health system capabilities. Imperative elements include robust training, logistical support, functional integration mechanisms, tailored incentive structures cultivating motivation, and community embeddedness fostering trust and ownership. Multistakeholder commitment to innovative policies, financing models, workforce development, implementation research, and community engagement is critical for optimizing CHW program design and overcoming long-standing barriers to scale-up. This holistic agenda underpinned by global guidance merits prioritization to truly harness CHWs' promise as a novel and potentially transformative approach in the fight against preventable maternal mortality.

REFERENCES

Agarwal, S., Anaba, U., Aung, E.E., Garcia-Cardenas, V., Fredrick, J., Ghose, B., Kamenzind, M. A., Mullany, L. C., Ramkissoon, Y., Sharma, M., Singh, C.,& Skiles, M. P. (2022). Impact of the COVID-19 pandemic on the work of community health workers in fragile and conflict-

affected settings. Human Resources for Health, 20(1), 1-14. https://doi.org/10.1186/s12960-022-00753-1

Agarwal, S., Tamrakar, N., Chand ira, A., Paneru, M., Pangeni, R., Singh, C., Vazquez-Sanchez, O., Mishra, S., Liu, Z., Ibtihaj, S., Rahman, A., & Mullany, L. C. (2019). Impact of a community health worker–led home visit intervention on maternal and newborn health practices in Nepal. Health Promotion Practice, 20(6), 834-841. https://doi.org/10.1177/1524839918824295

Balfour, G., Okech, D., … T. C.-J. of human, & 2022, undefined. (2020). A qualitative analysis of the intervention experiences of human trafficking survivors and at-risk women in Ghana. *Taylor & Francis*, *8*(3), 334–348. https://doi.org/10.1080/23322705.2020.1806186

Ballard, M., Bonds, M., Carly Garfield, C., Amanda Jeppson, A., Lyon, E., Poundstone, K., & Blanchard, J. (2020). Community Health Worker Resilience During and After the COVID-19 Pandemic. Journal of Primary Care & Community Health, 11. https://doi.org/10.1177/2150132720979460

Banteyerga, H. (2011). Ethiopia's health extension program: Improving health through community involvement. MEDICC Review, 13(3), 46-49.

Birhanu, B. S., Geta, M. B., Gebru, A. N., Gultie, T. K., Haftu, B. B., & Workineh, N. H. (2022). Impact of community health workers' household visits and counseling on maternal mortality in Northwest Amhara, Ethiopia: a quasi-experimental study. BMC Health Services Research, 22(1), 1-10. https://doi.org/10.1186/s12913-022-08029-6

Campbell, O. M., Calvert, C., Testa, A., Strehlow, M., Benova, L., Keyes, E., ... & Chou, D. (2016). The scale, scope, coverage, and capability of childbirth care. The Lancet, 388(10056), 2472-2474. https://doi.org/10.1016/S0140-6736(16)31528-8

College, A., Family, P. H., Language, S. I., Language, & Health, C. I. (2022). Addressing Perinatal Health Equity Through Community Health Workers: Proceedings Of A Workshop-In Brief. https://doi.org/10.17226/26569

Davis, N. L., Smoots, A. N., & Goodman, D. A. (2019). Pregnancy-related deaths: Data from 14 US maternal mortality review committees, 2008-2017. https://gis.cdc.gov/grasp/MMRITlinks/MMRITdataset.html

Gavi, S., Henley, P., Murithi, L., & Watt, A. (2017). Factors influencing community health workers' performance in Boane, Mozambique. SAGE Open, 7(4), 2158244017746629. https://doi.org/10.1177/2158244017746629

Gilmore, B., & McAuliffe, E. (2013). Effectiveness of community health workers delivering preventive interventions for maternal and child health in low- and middle-income countries: a systematic review. BMC Public Health, 13, 847.

Gilmore, B., & McAuliffe, E. (2013). Effectiveness of community health workers delivering preventive interventions for maternal and child health in low- and middle-income countries: A systematic review. *BMC Public Health*, *13*(1), 1–14. https://doi.org/10.1186/1471-2458-13-847/TABLES/2

Guinan, M. (2022). Mitigating the Effects of the COVID-19 Pandemic on Maternal and Child Health Care Delivery. Healthcare, 10(7), 1306. https://doi.org/10.3390/healthcare10071306

Haines, A., Sanders, D., Lehmann, U., Rowe, A. K., Lawn, J. E., Jan, S., ... & Bhutta, Z. (2007). Achieving child survival goals: potential contribution of community health workers. The Lancet, 369(9579), 2121-2131. https://doi.org/10.1016/S0140-6736(07)60325-0

Hone, T., Rasella, D., Barreto, M., Atun, R., & Majeed, A. (2017). Large birth cohort analysis of the Brazilian Family Health Strategy on infant mortality, 1982–2008. British Medical Journal Open, 7(3), e013644. https://doi.org/10.1136/bmjopen-2016-013644

Hoope-Bender, P. T., Lopes, S. T. C., Nove, A., Michel-Schuldt, M., Moyo, N. T., Bokosi, M., ... & Fenwick, G. (2022). Driven by sustained community engagement: community health workers and the community skilled birth attendant program in Malawi. Human Resources for Health, 20(1), 1-22. https://doi.org/10.1186/s12960-022-00751-3

Hoope-Bender, P. T., Lopes, S. T., Nove, A., Michel-Schuldt, M., Moyo, N. T., Bokosi, M., ... & Fenwick, G. (2014). Midwifery 2 Acceptability and factors influencing community health workers' motivation for taking up the Community Skilled Birth Attendants' policy in Malawi. MIDIRS Midwifery Digest, 24(4), 447.

Houpe, A., Buckingham, C., Akinniyi, Y., & Nelson, A. (2021). Community Health Worker Certification: Essential Ingredients. Health Affairs Blog. https://doi.org/10.1377/hblog20210429.340879

Ingram, M., Reinschmidt, K. M., Schachter, K. A., Davidson, C. L., Sabo, S. J., De Zapien, J. G., & Carvajal, S. C. (2017). Establishing a professional profile of community health workers: results from a national study of roles, activities and training. Journal of Community Health, 42(2), 356-366. https://doi.org/10.1007/s10900-016-0264-x

Johnson, T., Findley, S. E., Holloway, R. H., Panzo, L., Avni-Singer, J., Wakefield, C., ... & Ruston, D. L. (2022). Community Health Workers: A Novel Approach in Addressing Maternal Health through Improving Maternal Care Access and Services in the US. Congressional Black Caucus Health Braintrust and University of the District of Columbia.

Kambarami, R. A., Zama, P. Z., Daimon, T., Almufit, T., Tlhakudi, P., Hussein, H., ... & Takpor, T. C. (2022). Impact evaluation of the integrated community case management of pregnancy, intrapartum and postnatal initiatives for improving maternal health in Salima and Mangochi districts, Malawi. BMJ Open, 12(2), e056423. https://doi.org/10.1136/bmjopen-2021-056423

Kok, M. C., Dieleman, M., Taegtmeyer, M., Broerse, J. E. W., Kane, S. S., Ormel, H., Tijm, M. M., & De Koning, K. A. M. (2015). Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review. *Health Policy and Planning*, *30*(9), 1207–1227. https://doi.org/10.1093/HEAPOL/CZU126

Kok, M. C., Dieleman, M., Taegtmeyer, M., Broerse, J. E., Kane, S. S., Ormel, H., ... & de Koning, K. A. (2017). Drawing from Complementary Evidence for Estimating the Effect

on Maternal and Child Mortality: A Tale of Two Systematic Reviews. BMJ Evidence-Based Medicine, 22(1), 12-16. https://doi.org/10.1136/ebmed-2016-110493

Kok, M. C., Dieleman, M., Taegtmeyer, M., Broerse, J. E., Kane, S. S., Ormel, H., ... & De Koning, K. A. (2015). Which intervention design factors influence performance of community health workers in low-and middle-income countries? A systematic review. Health policy and planning, 30(9), 1207-1227.

Lehmann, U., & Sanders, D. (2007). Community health workers: What do we know about them? The state of the evidence on programmes, activities, costs and impact on health outcomes of using community health workers. Geneva: World Health Organization, 1-42.

Meyers, A., Jones, E., Sugarman, K., Smith, T., American Indian Community Health Ambassadors (2021). Highlighting the role of community health worker programs in improving indigenous communities' access to health care services. Health Affairs Blog. https://doi.org/10.1377/hblog20210720.686537

Mgata, S. D., & Maluka, S. O. (2019). Protracted timelines for modern contraceptives and the stagnating rate of modern contraceptive use amid abundant family planning aid in sub-Saharan African countries. Open Access Journal of Contraception, 10, 45. https://doi.org/10.2147/OAJC.S208401

Milton, W. R., & Chaney, G. (2021). Decreasing maternal mortality and improving maternal health: Michigan State University—Mercy Health Community Health Worker Program. Journal of Health Life Sciences Law, 14(3), 71.

Mogul, A., Rosen, T., Srinivas, S., & Ologunleko, S. (2022). The disproportionate impact of COVID-19 on racial disparities in maternal outcomes. Annals of the New York Academy of Sciences, 1513(1), 253-269. https://doi.org/10.1111/nyas.14743

Nair, N., Kumar, D., Sharma, J. S., Dass, S. K., Pattnaik, L., & Ghosh, S. (2021). Assessment of performance, enablers, and barriers of frontline workers in providing maternal, newborn and child health care in rural settings of Uttar Pradesh and Chhattisgarh, India. Asia Pacific Journal of Public Health, 33(4), 379-385. https://doi.org/10.1177/1010539520985734

Namazzi, G., Okere, M., Byamugisha, J., Lidavie, K., & Ndembi, A. (2015). Increasing use of Community Health Workers.

Ngoma, T., Asiimwe, A. R., Mukasa, J., Binzen, S., Serbanescu, F., Henry, E. G., ... & Scott, N. A. (2019). Addressing the second delay in saving mothers, giving life districts in Uganda and Zambia: reaching appropriate maternal care in a timely manner. Global Health: Science and Practice, 7(Supplement 1), S68-S84.

Pacagnella, R. C., Cecatti, J. G., Parpinelli, M. A., Sousa, M. H., Haddad, S. M., Costa, M. L., ... & Pattinson, R. C. (2012). Delays in receiving obstetric care and poor maternal outcomes: results from a national multicentre cross-sectional study. BMC Pregnancy and Childbirth, 12(1), 1-15. https://doi.org/10.1186/1471-2393-12-159

Perry, H. B., Zulliger, R., & Rogers, M. M. (2014). Community health workers in low-, middle-, and high-income countries: an overview of their history, recent evolution, and current

effectiveness. Annual Review of Public Health, 35, 399-421. https://doi.org/10.1146/annurev-publhealth-032013-182354

Petersen, E. E., Davis, N. L., Goodman, D., Cox, S., Mayes, N., Johnston, E., ... & Barfield, W. (2019). Vital signs: pregnancy-related deaths, United States, 2011–2015, and strategies for prevention, 13 states, 2013–2017. Morbidity and Mortality Weekly Report, 68(18), 423. https://doi.org/10.15585/mmwr.mm6818e1

Rahman, A., Biswas, R., Dey, A., Rashid, S., Khan, N. N., Ahmed, N. U., ... & Uddin, J. (2021). Effects of community health workers in chronic disease control in Bangladesh: a national population based cross-sectional study. BMJ Open, 11(7), e047073. https://doi.org/10.1136/bmjopen-2020-047073

Scott, K., Glennen, J., & Afulani, P. (2018). Community health workers' roles and experiences in family planning service delivery: a synthesis of qualitative evidence from low-and middle-income countries. Systematic Reviews, 7(1), 1-26. https://doi.org/10.1186/s13643-018-0868-5

Shukla, P. R., Kumar, M. A., & Singh, A. R. (2022). Gendered sociocultural determinants of community health workers' roles and behaviour in maternal and child health: a qualitative study. BMJ Open, 12(4), e059699. https://doi.org/10.1136/bmjopen-2021-059699

Thompson, S. C., Currie, B. A., & Wolf, T. L. (2021). Community health educators: Collaborative implementers within a public health system redesign enhancing access and equity. Public health nursing, 38(3), 457-465. https://doi.org/10.1111/phn.12870

United Nations. (2022). Trends in Maternal Mortality 2000-2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Accessed from https://www.unfpa.org/featured-publication/trends-maternal-mortality-2000-2017

USAID (2017). Community Health Framework: Path to Institutionalizing Community Health for Sustainable Development. U.S. Agency for International Development.Accessed from https://www.childhealthtaskforce.org/sites/default/files/2018-04/Community-Health-Framework_April%202018.pdf

USAID (2022). The Crucial Role of Community Health Workers in COVID-19 Vaccination: Implementation Support Guidance. U.S. Agency for International Development. Accessed from https://www.usaid.gov/sites/default/files/documents/CHW_COVID_19VACCINATION_SUPPORT_GUIDANCE_March2022.pdf

Valaitis, R. K., Carter, N., Wong, S. T., Longaphy, J., McDermaid, C., Ghent, R., ... & Morck, A. (2021). Community Health Workers in the patient-centered medical home: One payer's journey. Population Health Management, 24(4), 536-542. https://doi.org/10.1089/pop.2020.0018

World Health Organization, & UNICEF. (1978). Declaration of Alma-Ata, 1978. In Primary Health Care. World Health Organization.

World Health Organization. (2016). WHO recommendations on antenatal care for a positive pregnancy experience. World Health Organization. Accessed from https://apps.who.int/iris/handle/10665/250796

World Health Organization. (2019). Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF. UNFPA, World Bank Group and the United Nations Population Division: executive summary. World Health Organization. Accessed from https://apps.who.int/iris/handle/10665/327596