INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY FUTURISTIC DEVELOPMENT

Conceptual Model Integrating Health Literacy Training into Community Health Worker Capacity Building Programs

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Article Info

P-ISSN: 3051-3618
E-ISSN: 3051-3626
Volume: 01
Issue: 02
July – December 2020
Received: 25-05-2020
Accepted: 24-06-2020
Published: 18-07-2020
Page No: 97-117

Abstract
Community health workers serve as critical intermediaries between formal healthcare systems and underserved populations, particularly in low- and middle-income countries where access to quality health services remains constrained by geographical, economic, and infrastructural barriers. Despite their pivotal role in health service delivery, many community health worker programs face sustainability challenges rooted in inadequate training frameworks that fail to address health literacy as a foundational competency. This study proposes a comprehensive conceptual model that integrates health literacy training into capacity building programs for community health workers, addressing gaps in current implementation approaches. The model synthesizes evidence from immunization programs, nutrition interventions, disease surveillance initiatives, and health information systems to construct a multi-dimensional framework encompassing pedagogical strategies, technological integration, community engagement mechanisms, and outcome measurement protocols. Drawing from experiences across sub-Saharan Africa, South Asia, and Latin America, the research identifies critical success factors including context-specific curriculum design, participatory learning methodologies, digital health tools adaptation, and continuous mentorship structures. The proposed model emphasizes bidirectional knowledge exchange between community health workers and the populations they serve, recognizing that effective health literacy training must account for cultural beliefs, linguistic diversity, and local health priorities. Implementation challenges such as resource constraints, workforce retention difficulties, supervision gaps, and policy misalignment are systematically examined alongside evidence-based strategies for overcoming these barriers. The conceptual framework incorporates monitoring and evaluation components that track both health literacy competency acquisition among community health workers and downstream health outcomes in target communities. Recommendations for program designers include establishing competency-based training standards, leveraging mobile learning platforms, fostering peer learning networks, and ensuring alignment with national health priorities. This model contributes to the growing body of knowledge on health workforce strengthening by positioning health literacy not merely as an ancillary skill but as a core competency that enables community health workers to effectively translate complex medical information into actionable health behaviors. The findings hold implications for ministries of health, international development partners, non-governmental organizations, and academic institutions engaged in community health worker program design and implementation across diverse global health contexts.

DOI: https://doi.org/10.54660/IJMFD.2020.1.2.97-117

Keywords: Health Literacy, Community Health Workers, Capacity Building, Health Workforce Development, Community Engagement, Health Systems Strengthening, Training Frameworks, Low- and Middle-Income Countries

1. Introduction

The global health landscape has increasingly recognized community health workers as essential components of primary healthcare delivery systems, particularly in settings where physician-to-population ratios remain critically low and geographical barriers limit access to facility-based services (Frieden, 2014). Community health workers bridge the divide between formal

health systems and marginalized communities, providing preventive care, health education, basic treatment services, and linkages to higher-level facilities for populations that might otherwise remain disconnected from essential health interventions (Woldie *et al*., 2018). Their effectiveness in improving health outcomes has been documented across diverse contexts, from immunization coverage enhancement to maternal and child health interventions, tuberculosis case finding, and chronic disease management (Scholten *et al*., 2018; Anyebe *et al*., 2018). However, the sustainability and impact of community health worker programs depend fundamentally on the quality of training and ongoing capacity development mechanisms established to support their work (Brinkerhoff and Goldsmith, 1992). Traditional training approaches often emphasize disease-specific knowledge transmission and procedural competencies while neglecting the foundational skill of health literacy that enables community health workers to effectively communicate complex health information in culturally appropriate and comprehensible ways (Veillard *et al*., 2017). Health literacy encompasses the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions, and when applied to community health worker training, it extends to the pedagogical competencies required to build health literacy among the populations they serve (Hardon and Blume, 2005).

The imperative for integrating health literacy training into community health worker capacity building programs emerges from multiple converging factors. First, epidemiological transitions in low- and middle-income countries have created dual burdens of communicable and non-communicable diseases, requiring community health workers to address increasingly complex health challenges that demand sophisticated communication skills beyond rote protocol adherence (Haddad *et al*., 2016). Second, the proliferation of health misinformation through digital channels has created environments where community health workers must not only provide accurate information but also actively counter false narratives and build critical health information evaluation skills among community members (Nettles, 1991). Third, evidence demonstrates that community engagement and participatory approaches yield superior health outcomes compared to top-down information dissemination, necessitating training frameworks that equip community health workers with facilitation and dialogue skills rather than merely didactic teaching capabilities (Molyneux and Bull, 2013). Fourth, the sustainability of health programs increasingly depends on community ownership and empowerment, which can only be achieved when communities develop the health literacy capacities to make informed decisions about their health priorities and hold health systems accountable (Ciccone *et al*., 2014). Fifth, technological advances have created opportunities for innovative training modalities including mobile learning, digital decision support tools, and remote mentorship platforms that can enhance health literacy training scalability and effectiveness (Nwaimo *et al*., 2019; Menson *et al*., 2018). Despite growing recognition of health literacy's importance, systematic integration into community health worker training curricula remains limited, with most programs treating health communication as a soft skill rather than a core technical competency requiring structured learning and assessment (Mbengue *et al*., 2017). This gap persists partly due to conceptual ambiguities regarding what health literacy training should encompass in community health worker contexts, how it should be delivered given resource constraints, and how competency acquisition should be measured and reinforced through supervision systems (Symaco and Tee, 2019). Existing training programs often employ cascade models where trainers conduct time-limited workshops covering extensive content without adequate attention to adult learning principles, practical skill application, or contextual adaptation (National Vaccine Advisory Committee, 1999). The result is community health workers who possess theoretical knowledge but lack confidence and competence in translating that knowledge into effective health literacy building activities within their communities (Dubé *et al*., 2018). Furthermore, training programs frequently fail to account for the bidirectional nature of effective health literacy development, where community health workers must learn from communities about existing knowledge systems, beliefs, and practices before they can effectively introduce new health concepts (Shen *et al*., 2014).

The development of this conceptual model responds to calls from global health stakeholders for more rigorous, evidence-based approaches to health workforce strengthening that move beyond input-focused metrics toward outcome-oriented frameworks demonstrating measurable improvements in both worker competencies and population health indicators (Phillips *et al*., 2017). The model draws on implementation science principles to bridge the knowing-doing gap that characterizes many community health worker programs, where training activities occur but fail to translate into sustained behavior change among workers or communities (Ojakaa *et al*., 2011). It incorporates insights from successful community-based health interventions that have demonstrated the power of well-trained, supported community health workers to achieve significant health gains even in resource-constrained settings (Phillips *et al*., 2006). The conceptual framework integrates multiple theoretical perspectives including adult learning theory, behavior change communication models, implementation science frameworks, and community engagement principles to construct a holistic approach to health literacy integration (Bravo-Alcántara and Danovaro-Holliday, 2014).

Importantly, this model recognizes that community health workers operate within complex adaptive health systems where multiple factors influence their effectiveness including supportive supervision quality, supply chain reliability, referral pathway functionality, community acceptance, and alignment with national health policies (Raviglione and Pio, 2002; Onwujekwe *et al*., 2019). Therefore, the proposed framework extends beyond individual-level training components to address organizational and systemic enablers that must be in place for health literacy training investments to yield sustained returns (Okwo-Bele and Cherian, 2011). The model also acknowledges the diversity of community health worker programs globally, ranging from volunteer-based models to paid cadres, from generalist health promoters to specialized program workers, and from centralized government programs to non-governmental organization initiatives, necessitating adaptable rather than prescriptive guidance (Ramsay *et al*., 2016). By synthesizing evidence from immunization programs, nutrition interventions, tuberculosis control efforts, and emerging areas such as non-communicable disease management, the model provides cross-cutting principles applicable across health domains

while allowing for context-specific adaptation (Warren *et al*., 2013).

The structure of this article presents a comprehensive exploration of health literacy integration in community health worker training, beginning with a literature review examining existing evidence on training effectiveness, health literacy interventions, and community health worker program outcomes. Subsequently, the methodology section outlines the conceptual framework development process and analytical approaches employed. The core analytical sections systematically examine training curriculum design principles, delivery modalities and pedagogical strategies, supervision and mentorship systems, technology integration opportunities, implementation challenges, and evidence-based recommendations. Each section incorporates visual models and structured data presentations to enhance conceptual clarity. The article concludes with synthesized insights and directions for future research and implementation. This comprehensive approach aims to provide actionable guidance for program designers, implementers, policymakers, and researchers committed to strengthening community health worker effectiveness through health literacy capacity building.

2. Literature Review

The evolution of community health worker programs globally reflects broader shifts in primary healthcare philosophy from facility-centric models toward community-based approaches that prioritize accessibility, cultural appropriateness, and community participation in health decision-making (Frame *et al*., 2011). Historical analyses of successful community health worker initiatives reveal common elements including careful selection processes that prioritize community members who already possess social capital and trust within their communities, structured training programs that balance biomedical knowledge with communication skills, ongoing supervision and support systems, and integration within broader health system structures rather than parallel program establishment (Brooks *et al*., 2017). The Navrongo experiment in Ghana demonstrated how community health officers supported by adequate logistics and supervision could significantly improve child survival and reproductive health outcomes through community-based service delivery, providing early evidence of the community health worker model's potential when properly resourced and managed (Phillips *et al*., 2006). Similarly, experiences from immunization programs across sub-Saharan Africa have illustrated that community health workers trained specifically in vaccine communication and community mobilization can substantially increase immunization coverage even in areas with historically low uptake (Abdulkarim *et al*., 2011).

The concept of health literacy has evolved from a narrow focus on reading comprehension of medical materials toward a more expansive understanding encompassing critical thinking about health information, navigation of complex health systems, and advocacy for one's health needs (Schoch-Spana *et al*., 2007). This evolution has important implications for community health worker training, suggesting that literacy-building activities must extend beyond simple information provision to develop analytical capacities that enable communities to evaluate health claims, understand risk-benefit tradeoffs, and make informed decisions aligned with their values and circumstances (Cartmell *et al*., 2018). Research on health literacy interventions in low-resource settings indicates that effective programs employ participatory methodologies where learners actively engage with content through discussion, role-play, and practical application rather than passive reception of information (Mackey *et al*., 2018). These findings align with adult learning principles emphasizing the importance of relevance, experiential learning, and problem-solving approaches over didactic instruction (Cochi *et al*., 2014).

Evidence regarding community health worker training effectiveness reveals significant variation in program outcomes linked to training quality and duration, with studies consistently finding that brief, one-time training events produce minimal sustained competency gains compared to longitudinal learning programs incorporating initial training, supervised practice, refresher sessions, and ongoing mentorship (Phillips *et al*., 2017). A systematic review examining determinants of effective vaccine coverage in low- and middle-income countries identified health worker training quality as a critical factor, noting that training programs addressing not only technical knowledge but also interpersonal communication skills, cultural competence, and community engagement strategies produced better immunization outcomes than purely technical training (Delany-Moretlwe *et al*., 2018). Research from South Africa's HPV vaccine introduction documented how insufficient attention to communication training for implementers contributed to resistance and misconceptions, while subsequent investments in structured communication capacity building improved acceptance rates (Yearley, 2006). These findings underscore the necessity of integrating health literacy and communication competencies as core rather than peripheral training components.

The literature on community engagement in health programs emphasizes the importance of bidirectional communication where health workers learn from communities about existing knowledge, beliefs, and practices before attempting to introduce new health concepts (Piot *et al*., 2019). This dialogical approach contrasts with traditional health education models that position health workers as knowledge holders transmitting information to passive recipients, instead recognizing communities as active participants in co-creating health solutions (Mensah *et al*., 2018). Studies examining barriers to health program uptake consistently identify gaps between technical health messages and community understanding, often rooted in health workers' inability to effectively translate medical concepts into locally meaningful terms or failure to address underlying concerns and misconceptions (Martorell, 1999). Research on malnutrition interventions illustrates this challenge, with evidence showing that programs achieving sustainable nutrition behavior change invested substantial effort in understanding local food systems, cultural feeding practices, and economic constraints before designing interventions, requiring community health workers to possess sophisticated contextual knowledge alongside nutritional science understanding (Schroeder and Brown, 1994).

The role of supervision and ongoing support in community health worker effectiveness has received increasing attention in the literature, with evidence indicating that without regular supportive supervision, training gains rapidly decay and workers revert to previous practices or become demotivated (Haddad *et al*., 2016). Effective supervision models emphasize mentorship, problem-solving, and skill

reinforcement rather than purely administrative oversight or fault-finding (Jones and Pebley, 1992). Research from tuberculosis control programs demonstrates that community health workers receiving regular supervisory visits with feedback on their communication approaches and opportunities to discuss challenging cases maintained higher performance levels than those receiving infrequent or purely checklist-based supervision (Caldwell, 1994). These findings suggest that health literacy training must be complemented by supervision systems designed to reinforce and deepen communication competencies over time (Hawkesworth *et al*., 2013).

Technological innovations have created new possibilities for community health worker training and support, with mobile learning platforms enabling flexible, self-paced learning and digital job aids providing real-time decision support during community interactions (Hawkes and Popkin, 2010). Studies examining mobile health interventions for community health workers report improved knowledge retention and greater confidence when workers can access training materials repeatedly and reference digital resources during client encounters (Sachs and Malaney, 2002). However, research also highlights challenges including limited digital literacy among some community health worker populations, infrastructure constraints such as unreliable electricity and internet connectivity, and the risk that technology introduction without adequate training and support may increase rather than reduce worker stress (Gwatkin *et al*., 2007). Effective technology integration therefore requires careful attention to user experience, appropriate interface design, and ongoing technical support systems (Alderman and Garcia, 1994).

Sustainability challenges represent a persistent theme in community health worker literature, with numerous programs demonstrating initial success during donor-funded implementation phases but failing to maintain momentum after transition to government management or funding cessation (Thomas and Strauss, 1997). Analysis of these sustainability failures identifies multiple contributing factors including inadequate integration into national health workforce policies, failure to establish sustainable financing mechanisms, insufficient attention to career progression pathways for community health workers, and lack of institutional ownership by ministries of health (Khan *et al*., 2006). Research on sustainable health program design emphasizes the importance of early engagement with government stakeholders, alignment with national health strategies, capacity building of local institutions to manage programs, and establishment of domestic financing mechanisms from program inception (Martorell *et al*., 1995). These insights inform the proposed conceptual model's emphasis on health system integration rather than parallel program structures (Lopez *et al*., 2006).

Equity considerations emerge as critical in the literature, with evidence demonstrating that community health worker programs can either reduce or exacerbate health disparities depending on program design and implementation approaches (de Onis and Blössner, 1997). Research examining health service utilization patterns indicates that without intentional equity-focused strategies, community health worker programs may preferentially reach more educated, wealthier community members who already possess higher health literacy, thereby widening rather than narrowing health gaps (Dercon and Krishnan, 2000). Effective equity-promoting approaches include targeted outreach to marginalized subpopulations, training content specifically addressing barriers faced by disadvantaged groups, language-appropriate materials for linguistic minorities, and monitoring systems that track service coverage across socioeconomic strata (Van de Poel *et al*., 2007). The proposed model incorporates these equity considerations by emphasizing context-specific training design that accounts for diversity within communities and equips community health workers with skills to identify and address barriers faced by the most vulnerable populations (Smith and Haddad, 2002).

Gaps in the existing literature include limited rigorous evaluation of specific pedagogical approaches for building health literacy competencies among community health workers, insufficient documentation of the process of adapting training content to diverse cultural and linguistic contexts, and inadequate examination of how health literacy training interacts with other health system factors to influence ultimate health outcomes (Ruel *et al*., 2018). Most published studies focus on disease-specific outcomes such as immunization coverage or malnutrition rates rather than examining intermediate outcomes related to community health worker competencies or community health literacy levels (Pedrazzoli *et al*., 2017). Furthermore, much of the literature describes training inputs such as curriculum content and duration without systematically examining fidelity of implementation or the gap between intended and delivered training (Fotso and Kuate-Defo, 2005). These gaps underscore the need for more comprehensive frameworks that connect training design, implementation processes, competency outcomes, and ultimate health impacts through explicit causal pathways (Silva, 2005). The conceptual model presented in this article addresses these gaps by proposing a theory-driven framework that specifies mechanisms through which health literacy training influences community health worker performance and population health outcomes while acknowledging contextual factors that moderate these relationships (Kimani-Murage, 2013). This comprehensive approach aims to advance both theoretical understanding and practical guidance for integrating health literacy into community health worker capacity building efforts (Perkins *et al*., 2016).

3. Methodology

The development of this conceptual model integrating health literacy training into community health worker capacity building programs employed a systematic framework synthesis approach combining theoretical modeling, evidence mapping, and expert consultation processes. The methodology began with an extensive review of peer-reviewed literature, program implementation reports, and policy documents related to community health worker training, health literacy interventions, and health workforce development across diverse geographical contexts. Database searches were conducted across multiple health and social science platforms to identify relevant studies published between 2000 and 2020, with particular emphasis on implementation research from low- and middle-income countries where community health worker programs constitute critical health system components. Search terms encompassed variations of community health workers, health literacy, capacity building, training programs, health education, health communication, community engagement,

and related concepts. The review process prioritized studies providing detailed descriptions of training methodologies, implementation processes, and measured outcomes rather than limiting inclusion to randomized controlled trials, recognizing that implementation science questions require diverse evidence types to fully capture contextual complexities and program mechanisms.

Following evidence compilation, a thematic analysis was conducted to identify recurring themes, success factors, challenges, and gaps across different community health worker program types and geographical contexts. This analysis revealed patterns regarding effective training design principles, pedagogical approaches, supervision models, and implementation strategies while also highlighting persistent challenges including resource constraints, retention difficulties, and sustainability concerns. The conceptual model emerged iteratively through synthesis of these themes, organized around key domains identified as critical to effective health literacy integration including curriculum design, delivery modalities, supervision systems, technology integration, and monitoring frameworks. Each domain was further elaborated through sub-components derived from the evidence review, resulting in a multi-level framework spanning individual health worker competencies, organizational support structures, and health system enablers.

The model development process incorporated insights from multiple theoretical frameworks including adult learning theory, which emphasizes experiential learning, relevance, and self-direction in effective adult education; behavior change communication models, which highlight the importance of understanding target audience knowledge, attitudes, and practices before designing interventions; implementation science frameworks, which focus on factors influencing intervention adoption, implementation fidelity, and sustainability; and community engagement principles, which stress participatory approaches and bidirectional knowledge exchange. By integrating these diverse theoretical perspectives, the model achieves conceptual comprehensiveness while remaining grounded in practical implementation realities. The framework explicitly maps hypothesized causal pathways connecting training inputs to intermediate outcomes such as community health worker competency acquisition and ultimate outcomes including improved population health literacy and health behaviors, allowing for future empirical testing of model components.

Validation of the conceptual model involved consultation with practitioners, policymakers, and researchers engaged in community health worker programs across multiple countries. These consultations provided feedback on model comprehensiveness, practical applicability, and cultural appropriateness, leading to refinements that enhanced the framework's relevance for diverse implementation contexts. The model development process also considered feasibility constraints typical of low-resource settings, ensuring that recommendations remain achievable given common staffing, financing, and infrastructure realities rather than assuming ideal conditions rarely found in practice. This pragmatic orientation increases the model's utility for program designers working within real-world constraints while maintaining scientific rigor and evidence-based foundations.

The analytical sections that follow present detailed examinations of model components, drawing on evidence from the literature review to substantiate specific recommendations and design principles. Each section addresses a critical dimension of health literacy integration, progressing from foundational training curriculum design through delivery methodologies, supervision structures, technological tools, implementation challenges, and culminating in best practice recommendations. Visual representations including flowcharts and tables are strategically incorporated to enhance conceptual clarity and provide practical tools for program implementers. The methodology employed throughout emphasizes actionable guidance grounded in empirical evidence while acknowledging remaining knowledge gaps requiring future research. This approach aims to advance both theoretical understanding of effective health workforce development and practical implementation capacity for organizations and governments seeking to strengthen community health worker programs through enhanced health literacy training.

3.1. Curriculum Design and Content Development for Health Literacy Training

The foundation of effective health literacy integration in community health worker capacity building programs lies in carefully designed curricula that balance breadth of content coverage with depth of skill development, recognizing that both knowledge acquisition and competency demonstration are essential for effective community health practice (Onyekachi *et al*., 2020). Curriculum design must begin with clear articulation of learning objectives specifying not only what community health workers should know but also what they should be able to do upon training completion, emphasizing observable performance outcomes rather than mere information retention (Ozobu, 2020). These objectives should align with the specific health priorities and community health worker roles within each implementation context, acknowledging that community health workers in immunization-focused programs require different competencies than those engaged in nutrition interventions or chronic disease management, though core health literacy principles apply across domains (Asata *et al*., 2020a).

Effective curriculum development necessitates thorough needs assessment processes that examine existing competency gaps, community health priorities, and contextual factors influencing health literacy requirements (Asata *et al*., 2020b). These assessments should incorporate perspectives from multiple stakeholders including community health workers themselves, their supervisors, community members, and health system managers, ensuring that training content addresses real-world challenges and community needs rather than reflecting externally imposed priorities (Kingsley *et al*., 2020). Evidence from health information systems implementation demonstrates the value of participatory curriculum design processes where community health workers contribute to content selection and learning activity design, increasing training relevance and worker motivation (Oluyemi *et al*., 2020a; Oluyemi *et al*., 2020b). Such participatory approaches also build ownership and commitment among community health workers, enhancing training effectiveness and subsequent implementation fidelity (Oluyemi *et al*., 2020c).

Core curriculum content should encompass multiple competency domains including foundational health knowledge relevant to the community health worker's scope of practice, communication and interpersonal skills for effective community engagement, cultural competence for working with diverse populations, critical thinking skills for

analyzing health information and identifying misinformation, adult education methodologies for facilitating community learning, and ethical principles guiding health worker conduct (Olajide *et al*., 2020). The health knowledge component must balance technical accuracy with accessibility, equipping community health workers to understand health concepts sufficiently to explain them in simple language while avoiding overwhelming detail unnecessary for their role (Fasasi *et al*., 2020). Communication skills training should extend beyond simple message delivery to encompass active listening, empathetic response, question formulation, barrier identification, and tailored messaging based on individual community member needs and readiness for change (Chima *et al*., 2020).

Cultural competence development represents a critical curriculum component often neglected in traditional training programs, yet essential for health literacy effectiveness in diverse communities (Ikponmwoba *et al*., 2020a). This competence encompasses awareness of one's own cultural assumptions and biases, knowledge about different cultural health beliefs and practices, skills for eliciting cultural information from community members, and ability to negotiate between biomedical recommendations and cultural practices in respectful, non-judgmental ways (Moruf *et al*., 2020). Training activities that build cultural competence include case studies exploring cultural health practices, role-plays navigating cultural differences, community visits observing local practices, and reflective exercises examining personal assumptions (Okunade *et al*., 2020). Such activities prepare community health workers to approach communities with humility and openness rather than positioning themselves as superior knowledge holders imposing foreign health concepts (Aduwo *et al*., 2020a).

Critical thinking skill development has gained importance as communities increasingly encounter health misinformation through digital and traditional media channels, requiring community health workers to help community members evaluate information credibility and recognize false claims (Adenuga *et al*., 2020). Curriculum components addressing this competency should teach community health workers to identify common characteristics of misinformation, explain evidence hierarchies in accessible language, and facilitate community discussions that build analytical capacities rather than simply telling people what to believe (Eyinade *et al*., 2020). Training should also prepare community health workers to address conspiracy theories and mistrust that may underlie resistance to health interventions, requiring sophisticated understanding of how to acknowledge concerns while providing accurate information (Ikponmwoba *et al*., 2020).

Pedagogical skill development enables community health workers to move beyond information dissemination toward facilitation of community learning processes that build sustained health literacy (Ikponmwoba *et al*., 2020). This curriculum component should introduce community health workers to adult learning principles, participatory education methodologies, behavior change communication techniques, and group facilitation skills (Sobowale *et al*., 2020). Practical training activities should include designing health education sessions, practicing facilitation techniques, developing visual aids appropriate for low-literacy contexts, and adapting messages for different age groups and learning styles (Balogun *et al*., 2020a). Evidence from marketing and consumer behavior research demonstrates the effectiveness of experiential learning approaches where trainees practice skills repeatedly with feedback, suggesting that curriculum design should prioritize hands-on practice over theoretical lectures (Balogun *et al*., 2020b).

Integration of ethical principles throughout the curriculum ensures that community health workers understand their responsibilities to respect community autonomy, maintain confidentiality, avoid coercion, acknowledge limitations of their knowledge and authority, and refer appropriately to higher-level services when needed (Abass *et al*., 2020). Ethical training should address common dilemmas community health workers encounter such as managing competing demands between program targets and individual client needs, navigating situations where family members disagree about health decisions, responding to requests for services outside their scope of practice, and maintaining professional boundaries in communities where they have personal relationships (Didi *et al*., 2020). Case-based learning using scenarios drawn from real practice experiences provides effective pedagogy for ethical reasoning development (Balogun *et al*., 2020c).

The curriculum structure should reflect adult learning principles by organizing content into logical progressions from foundational concepts to advanced applications, incorporating frequent opportunities for practice and feedback, and ensuring relevance to community health workers' actual practice contexts (Osabuohien, 2017). Modular designs allowing flexible sequencing and adaptation to different contexts offer advantages over rigid linear curricula, enabling program managers to emphasize particular competencies based on local needs and health priorities (Osabuohien, 2019). Each module should include clear learning objectives, diverse teaching methodologies addressing different learning styles, assessment activities measuring competency acquisition, and take-home resources supporting continued learning (Oni *et al*., 2020). The curriculum should also incorporate mechanisms for ongoing updating as health priorities evolve and new evidence emerges, avoiding the common pitfall of training programs using outdated content due to lack of systematic review and revision processes (Nwaimo *et al*., 2019).

Assessment strategies integrated throughout the curriculum should measure both knowledge acquisition and skill demonstration, recognizing that knowing information differs from applying it effectively in practice (Fasasi *et al*., 2019). Competency-based assessment approaches that require trainees to demonstrate specific skills through practical exercises, role-plays, or supervised community practice provide more valid measures of training effectiveness than multiple-choice tests measuring knowledge recall (Umezurike and Ogunnubi, 2016). Formative assessments conducted during training allow identification of learning gaps requiring additional attention, while summative assessments at training conclusion determine readiness for independent practice (Umezurike and Iwu, 2017). Portfolio approaches where community health workers document their learning and skill development over time offer promising assessment methodologies aligned with adult learning principles and reflective practice promotion (Menson *et al*., 2018).

The curriculum must also address the reality that community health workers operate within resource-constrained settings often lacking ideal materials and support, requiring training that builds improvisation and adaptation skills (Scholten *et*

al., 2018). This includes teaching community health workers to conduct health education using locally available materials, adapt messages when standardized materials are inappropriate for specific contexts, and troubleshoot common implementation challenges without requiring external support (Anyebe *et al*., 2018). Building these adaptive capacities increases community health worker resilience and sustained effectiveness despite inevitable implementation challenges (Uwadiae *et al*., 2011). Overall, curriculum design represents a critical determinant of health literacy training effectiveness, requiring careful attention to content selection, pedagogical approaches, contextual adaptation, and alignment with community health worker roles and community health needs.

3.2. Training Delivery Modalities and Pedagogical Strategies

The selection and implementation of appropriate training delivery modalities significantly influence health literacy training effectiveness for community health workers, with evidence demonstrating substantial variation in outcomes based on pedagogical approaches employed (Aduwo and Nwachukwu, 2019). Traditional cascade training models where master trainers conduct brief workshops for large cohorts of community health workers have shown limited effectiveness due to insufficient time for skill practice, lack of individualized attention, and rapid knowledge decay without reinforcement (Aduwo *et al*., 2019a). More effective approaches employ extended learning periods combining initial intensive training with ongoing learning activities, supervised practice with feedback, peer learning opportunities, and refresher sessions that reinforce and deepen competencies over time (Aduwo *et al*., 2019b). Such longitudinal models align with adult learning theory emphasizing that complex skill acquisition requires repeated practice, reflection, and application in authentic contexts rather than one-time information transmission (Adenuga *et al*., 2019).

Blended learning approaches combining face-to-face instruction with digital learning components offer promising strategies for balancing quality and scalability in community health worker training (Nwaimo *et al*., 2019). Face-to-face sessions provide opportunities for interactive learning, relationship building between trainers and trainees, and immediate feedback on skill demonstration, while digital components enable self-paced learning, repetition of content as needed, and access to resources between formal training sessions (Uzozie *et al*., 2019). However, successful blended learning implementation requires attention to digital literacy levels among community health workers, technology access and reliability, and design of digital content that is engaging and pedagogically sound rather than simply converting text materials to digital formats (Okenwa *et al*., 2019). Mobile learning platforms specifically designed for low-bandwidth environments and basic mobile phones can extend training reach in resource-limited settings where computer and internet access remain constrained (Abass *et al*., 2019).

Experiential learning methodologies including role-plays, simulations, case studies, and supervised community practice provide powerful pedagogical strategies for health literacy training (Balogun *et al*., 2019). Role-play exercises where trainees practice health communication scenarios with peers allow safe experimentation with different messaging approaches and immediate feedback on effectiveness without risk of harming actual community members (Umoren *et al*., 2019). These activities should reflect realistic situations community health workers encounter including resistant clients, complex family dynamics, cultural misunderstandings, and resource constraints, preparing trainees for implementation challenges rather than presenting idealized scenarios divorced from practice realities (Didi *et al*., 2019). Facilitation of role-plays requires skilled trainers who can provide constructive feedback, draw out learning from experience, and create psychologically safe environments where trainees feel comfortable making mistakes and learning from them (Evans-Uzosike and Okatta, 2019).

Case-based learning using real or realistic scenarios from community health work provides another effective experiential pedagogy that develops critical thinking alongside knowledge application (Bukhari *et al*., 2019). Well-designed cases present complex situations without obvious single correct answers, requiring trainees to analyze information, consider multiple perspectives, weigh competing priorities, and justify their reasoning (Brinkerhoff and Goldsmith, 1992). Discussion of cases in small groups promotes peer learning and exposes trainees to diverse approaches and reasoning processes, enriching learning beyond what individual study could achieve (Frieden, 2014). Cases addressing health literacy specifically might present scenarios where community members express misconceptions, ask challenging questions, resist recommended practices due to cultural beliefs, or demonstrate low comprehension of health messages, requiring trainees to develop effective responses (Veillard *et al*., 2017).

Supervised community practice represents an essential training component where trainees apply learned skills in actual community settings with observation and feedback from experienced mentors (Hardon and Blume, 2005). This methodology bridges the gap between classroom learning and independent practice, providing scaffolded support as community health workers develop confidence and competence (Nettles, 1991). Effective supervised practice requires sufficient mentor availability, clear observation protocols focusing on specific competencies, structured feedback sessions, and progressive reduction of supervision as workers demonstrate readiness for independence (Mbengue *et al*., 2017). Programs employing robust supervised practice components consistently demonstrate superior outcomes compared to those relying solely on classroom training without practical application requirements (Ciccone *et al*., 2014).

Peer learning approaches including peer mentoring, learning circles, and communities of practice offer sustainable strategies for ongoing competency development beyond formal training periods (Symaco and Tee, 2019). These approaches leverage the collective knowledge and experience of community health worker cohorts, creating supportive environments where workers share challenges, problem-solve collaboratively, and learn from each other's successes and failures (National Vaccine Advisory Committee, 1999). Peer learning methodologies prove particularly valuable for health literacy training because communication challenges often lack clear technical solutions, benefiting from discussion of multiple approaches and collective wisdom (Dubé *et al*., 2018). Facilitation of effective peer learning requires establishing regular meeting structures, creating norms of mutual respect and confidentiality, occasionally

introducing new content or guest speakers to maintain engagement, and ensuring that more experienced members mentor newer workers rather than dominating discussions (Shen *et al*., 2014).

Coaching and mentorship models where experienced community health workers or supervisors provide ongoing individualized support represent another delivery modality that enhances training effectiveness (Ojakaa *et al*., 2011). Unlike traditional supervision focused on performance monitoring and problem identification, coaching emphasizes skill development through observation, demonstration, practice with feedback, and reflective conversation (Bravo-Alcántara and Danovaro-Holliday, 2014). Effective coaches help community health workers analyze their practice, identify areas for improvement, set development goals, and celebrate progress, creating positive learning relationships that motivate continuous improvement (Molyneux and Bull, 2013). Training programs should include coach preparation components ensuring that supervisors possess coaching skills rather than assuming that subject matter expertise automatically translates to effective coaching capacity (Raviglione and Pio, 2002).

The duration and intensity of training represent critical design decisions with significant implications for both effectiveness and feasibility (Onwujekwe *et al*., 2019). While longer training periods generally produce better competency acquisition, they also incur higher costs and may be impractical when community health workers must maintain other employment or family responsibilities (Okwo-Bele and Cherian, 2011). Evidence suggests that distributed learning models spreading training over extended periods with practice intervals between sessions may achieve better outcomes than intensive compressed training, allowing time for skill consolidation and real-world application between learning episodes (Ramsay *et al*., 2016). For health literacy training specifically, an initial intensive training of two to three weeks covering foundational competencies followed by monthly reinforcement sessions over six to twelve months represents a promising structure balancing quality and feasibility (Woldie *et al*., 2018).

Trainer selection and preparation critically influence training quality, yet many programs inadequately invest in trainer development, assuming that health professionals can effectively teach without pedagogical training (Frame *et al*., 2011). Effective trainers for community health worker programs possess not only technical health knowledge but also understanding of adult learning principles, facilitation skills, cultural competence, and ability to create inclusive learning environments (Warren *et al*., 2013). Training programs should establish trainer competency standards and provide trainer preparation including practice facilitation with feedback, exposure to diverse pedagogical methods, and ongoing professional development opportunities (Brooks *et al*., 2017). Master trainer models where highly skilled trainers build capacity of regional or district-level trainers can enhance training scalability while maintaining quality, provided adequate support and quality assurance mechanisms accompany decentralization (Phillips *et al*., 2006).

Assessment practices integrated throughout training delivery serve both learning and certification functions, providing trainees with feedback on progress while ensuring minimum competency standards before community deployment (Abdulkarim *et al*., 2011). Formative assessments embedded in training activities including observed practice sessions, peer feedback exercises, and self-assessment reflections support learning by identifying gaps requiring additional attention (Schoch-Spana *et al*., 2007). Summative assessments conducted at training conclusion should employ competency-based evaluation methods requiring demonstration of specific skills rather than only testing knowledge recall (Cartmell *et al*., 2018). For health literacy competencies, appropriate assessment methods include observed facilitation of health education sessions, evaluation of developed teaching materials, and demonstrated ability to adapt messages for different audiences and contexts (Mackey *et al*., 2018).

Table 1: Comparison of Training Delivery Modalities for Health Literacy Capacity Building

Delivery Modality	Strengths	Limitations	Optimal Application
Intensive Workshop (1–2 weeks)	Cost-efficient for large cohorts; establishes foundational knowledge; builds trainer-trainee relationships	Limited time for skill practice; rapid knowledge decay; insufficient individual attention	Initial training phase introducing core concepts and basic skills requiring reinforcement
Distributed Learning (6–12 months)	Allows practice between sessions; reinforces learning over time; accommodates work schedules	Requires sustained program commitment; higher total costs; participant dropout risk	Comprehensive competency development when resources permit extended engagement
Blended Learning (face-to-face + digital)	Combines interaction benefits with flexible access; scalable; supports self-paced learning	Requires technology access and digital literacy; content development expertise needed	Settings with adequate technology infrastructure and mixed literacy populations
Supervised Practice with Mentorship	Bridges theory-practice gap; provides contextualized learning; builds confidence gradually	Mentor availability constraints; requires skilled supervisors; resource-intensive	Essential complement to classroom training for skill application and refinement
Peer Learning Communities	Sustainable long-term; leverages collective experience; low-cost; builds supportive networks	Quality varies with group dynamics; may perpetuate errors without expert input	Ongoing competency maintenance and problem-solving support post-training

Language and literacy considerations represent critical factors in training design and delivery, particularly in multilingual contexts or where community health workers possess limited formal education (Cochi *et al*., 2014). Training should be conducted in languages community health workers understand fluently, with materials designed for appropriate literacy levels using clear language, visual supports, and minimal technical jargon (Phillips *et al*., 2017). When training must be conducted in lingua francas not spoken by all participants, interpretation services and translated materials become necessary, though this increases complexity and potential for miscommunication (Delany-Moretlwe *et al*., 2018). Health literacy training content should explicitly address how to communicate health concepts using simple language and visual aids appropriate for low-literacy audiences, modeling these practices in the

training itself (Yearley, 2006).

Creating inclusive and respectful learning environments where all participants feel valued and able to contribute represents a fundamental training quality principle (Piot *et al*., 2019). This requires trainers to actively manage group dynamics, ensure all voices are heard, address discriminatory comments or behaviors, acknowledge and validate diverse perspectives, and create psychologically safe spaces where participants can ask questions and admit uncertainty without fear of ridicule (Mensah *et al*., 2018). Particular attention to gender dynamics, generational differences, educational disparities, and other potential sources of hierarchy or exclusion helps ensure that training benefits all participants equitably (Martorell, 1999). Training venues should be accessible, comfortable, and appropriate for adult learners rather than reinforcing school-like environments that may trigger negative associations for those with limited positive educational experiences (Schroeder and Brown, 1994).

Integration of continuous quality improvement approaches in training delivery enables ongoing refinement based on participant feedback, observed learning outcomes, and post-training performance data (Haddad *et al*., 2016). This includes collecting systematic feedback from trainees about training relevance, clarity, pacing, and suggestions for improvement; observing trainees during practice sessions to identify common learning challenges; tracking post-training competency levels to assess training effectiveness; and making iterative adjustments to content, methods, and duration based on these data (Jones and Pebley, 1992). Programs that institutionalize such learning cycles demonstrate superior training quality over time compared to those using static training designs without systematic evaluation and refinement (Caldwell, 1994). The pedagogical strategies and delivery modalities employed in health literacy training ultimately determine whether community health workers acquire not merely knowledge about health topics but the sophisticated communication competencies required to effectively build health literacy within the diverse communities they serve (Hawkesworth *et al*., 2013).

3.3. Supervision, Mentorship, and Continuous Support Systems

The sustainability of health literacy competencies developed through initial training depends critically on supervision and ongoing support systems that reinforce learning, address emerging challenges, and prevent skill decay over time (Hawkes and Popkin, 2010). Traditional supervision models emphasizing administrative oversight, checklist completion, and problem identification have shown limited effectiveness in maintaining community health worker performance, often creating adversarial relationships rather than supportive learning environments (Sachs and Malaney, 2002). Contemporary approaches emphasize supportive supervision characterized by collaborative problem-solving, skill coaching, resource provision, and recognition of achievements alongside identification of improvement areas (Gwatkin *et al*., 2007). This paradigm shift requires fundamental changes in supervisor training, role definitions, and accountability systems that have historically prioritized fault-finding over capacity development (Alderman and Garcia, 1994).

Effective supervision for health literacy competency maintenance begins with clear definition of supervisory roles and responsibilities that balance support functions with quality assurance requirements (Thomas and Strauss, 1997). Supervisors must possess both technical knowledge of health content and pedagogical understanding of how to coach communication skills, requiring comprehensive supervisor training rather than assuming subject matter expertise suffices for effective supervision (Khan *et al*., 2006). Supervisor preparation should include communication coaching techniques, observation protocols for assessing health literacy competencies, constructive feedback delivery methods, adult learning principles, and strategies for motivating and supporting community health workers facing challenging circumstances (Martorell *et al*., 1995). Programs investing adequately in supervisor capacity building consistently demonstrate better community health worker performance than those neglecting this critical component (Lopez *et al*., 2006).

The frequency and nature of supervisory interactions significantly influence their effectiveness, with evidence suggesting that monthly supervision combining facility-based meetings and community visit observations provides optimal balance between support intensity and feasibility (de Onis and Blössner, 1997). Supervision sessions should incorporate multiple activities including review of work performance data and challenges encountered, observation of community health workers facilitating health education or counseling activities with feedback, collaborative problem-solving for difficult cases or situations, provision of resources and supplies, and recognition of achievements and effective practices (Dercon and Krishnan, 2000). Structured supervision tools help ensure consistency and comprehensiveness while allowing flexibility to address emergent issues and individual worker needs (Van de Poel *et al*., 2007).

Observation-based supervision focusing specifically on health literacy and communication competencies represents a powerful methodology for identifying improvement areas and providing targeted coaching (Smith and Haddad, 2002). Supervisors accompany community health workers during household visits or community education sessions, observing their communication approaches, message clarity, cultural sensitivity, listening skills, and ability to address questions and concerns (Ruel *et al*., 2018). Structured observation checklists focusing on specific competencies such as using open-ended questions, checking understanding through teach-back methods, adapting messages based on audience cues, and addressing concerns empathetically provide concrete assessment frameworks (Pedrazzoli *et al*., 2017). Following observation, private feedback sessions allow supervisors to recognize strengths, identify specific improvement areas, demonstrate alternative approaches, and allow community health workers to practice refined techniques with coaching (Fotso and Kuate-Defo, 2005).

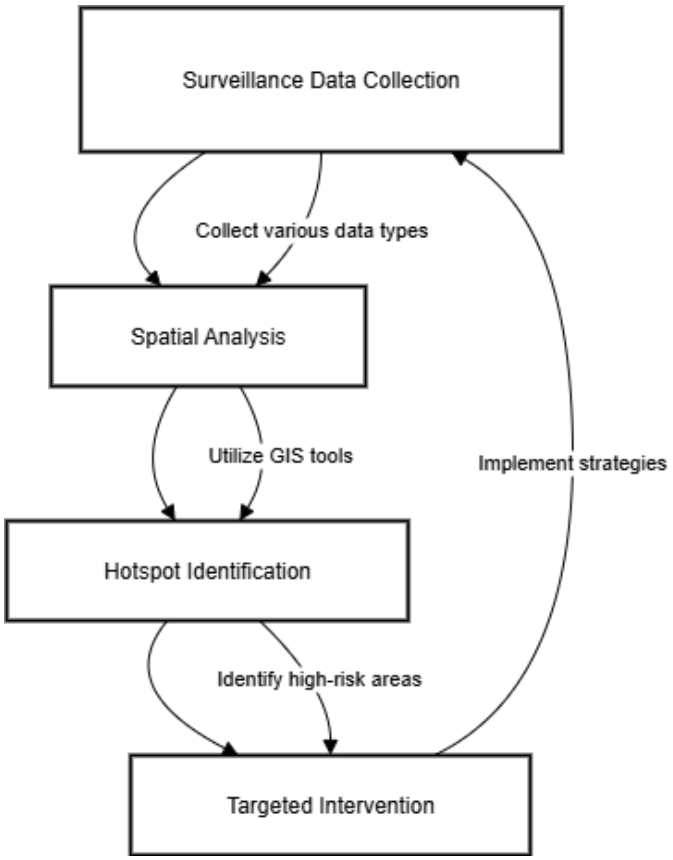
Mentorship relationships extending beyond formal supervision create additional support mechanisms particularly valuable for health literacy skill development (Silva, 2005). Mentors may be experienced community health workers, health facility staff, or program coordinators who provide ongoing guidance, encouragement, and practical advice based on their own experience (Kimani-Murage, 2013). Unlike supervisors who maintain accountability relationships, mentors function primarily as supporters and advisers, creating different dynamics that some community health workers find more comfortable for discussing challenges and uncertainties (Perkins *et al*., 2016). Effective

mentorship programs establish clear mentor-mentee matching processes, define mentorship roles and boundaries, provide mentor training, and create structures for regular mentor-mentee contact through phone calls, messages, or in-person meetings (Onyekachi *et al*., 2020).

Peer support networks among community health workers constitute another vital component of comprehensive support systems (Ozobu, 2020). These networks allow workers to share experiences, collaboratively address common challenges, learn from each other's innovations, and provide mutual encouragement and validation (Asata *et al*., 2020a). Programs can facilitate peer support through establishing WhatsApp groups or other communication platforms, organizing regular peer learning meetings, creating opportunities for community health workers to observe each other's work, and developing resource-sharing mechanisms (Asata *et al*., 2020b). For health literacy specifically, peer networks provide forums to discuss communication challenges, share effective messaging approaches, troubleshoot difficult community questions, and collectively analyze emerging misinformation requiring response (Kingsley *et al*., 2020).

Refresher training sessions conducted periodically reinforce initial training content, introduce new information or techniques, address common performance gaps identified through supervision, and maintain community health worker engagement and motivation (Oluyemi *et al*., 2020a). The frequency of refresher training should reflect the complexity of required competencies and observed skill decay rates, with quarterly or semi-annual sessions representing common models (Oluyemi *et al*., 2020b). Refresher sessions should be designed based on needs assessment identifying actual knowledge and skill gaps rather than simply repeating initial training content, ensuring relevance and efficient use of time (Oluyemi *et al*., 2020c). Integration of community health worker input in refresher planning increases session relevance and addresses worker-identified learning needs alongside program-identified priorities (Olajide *et al*., 2020).

Performance monitoring systems that track both process indicators related to community health worker activities and outcome indicators related to community health literacy and behaviors provide essential data for supervision and support (Fasasi *et al*., 2020). Process indicators might include number of households visited, health education sessions conducted, referrals made, and supplies distributed, while outcome indicators could include changes in community knowledge, attitudes, practices, and health outcomes (Chima *et al*., 2020). Analysis of these data during supervision allows identification of performance trends, celebration of achievements, diagnosis of challenges requiring support, and strategic planning for improvement (Ikponmwoba *et al*., 2020). However, monitoring systems must be designed to support learning rather than purely punitive accountability, using data to identify support needs rather than only assigning blame for shortfalls (Moruf *et al*., 2020).



Source: Author

Fig 1: Integrated Supervision and Support System for Community Health Workers

Recognition and incentive systems represent important motivational components of support structures, acknowledging community health worker contributions and reinforcing desired performance (Okunade *et al*., 2020). Recognition may take multiple forms including public acknowledgment at meetings or events, certificates for achievement, opportunities for additional training or career advancement, material incentives such as supplies or

equipment, or financial bonuses where resources permit (Aduwo *et al*., 2020a). For health literacy specifically, programs might recognize community health workers who demonstrate exceptional communication skills, develop innovative health education materials, or achieve notable improvements in community health knowledge and practices (Adenuga *et al*., 2020). However, incentive design requires careful attention to avoid creating competition that undermines collaboration or emphasizing quantity metrics that compromise quality (Eyinade *et al*., 2020).

Career development pathways for community health workers enhance retention and motivation by providing progression opportunities beyond entry-level positions (Ikponmwoba *et al*., 2020). These pathways might include advancement to senior community health worker roles with mentorship responsibilities, transition to supervisor positions, opportunities to specialize in particular health areas, or bridging programs enabling progression to formal health worker cadres with additional education (Ikponmwoba *et al*., 2020). Clear articulation of career pathways and requirements for advancement creates aspirational goals motivating continued learning and performance excellence (Sobowale *et al*., 2020). Health literacy mastery could serve as one criterion for advancement, incentivizing community health workers to continuously refine these competencies (Balogun *et al*., 2020a).

Addressing community health worker wellbeing and burnout prevention represents an increasingly recognized support system component, acknowledging that community health work involves emotional labor and exposure to community suffering that can lead to stress and burnout without adequate support (Balogun *et al*., 2020b). Support mechanisms addressing wellbeing include reasonable workload management, opportunities to debrief difficult cases, training in self-care strategies, peer support focusing explicitly on emotional challenges, and referral pathways for workers experiencing significant distress (Abass *et al*., 2020). Supervisors should be trained to recognize burnout signs and provide appropriate support or referrals, maintaining sensitivity to the reality that community health workers often face their own health, economic, and family challenges while serving communities (Didi *et al*., 2020).

Integration of community feedback mechanisms into supervision systems ensures that community perspectives inform assessment of community health worker performance and identification of support needs (Balogun *et al*., 2020c). Community feedback might be gathered through periodic surveys, focus group discussions, suggestion boxes, or community advisory committees, asking about their interactions with community health workers, satisfaction with services, and suggestions for improvement (Osabuohien, 2017). While recognizing potential biases in community feedback and protecting community health workers from unreasonable criticism, incorporating community voice provides valuable insights not captured through administrative monitoring alone (Osabuohien, 2019). For health literacy competencies specifically, community feedback about message clarity, respectfulness of interactions, and whether community health workers effectively address questions and concerns provides direct assessment of communication effectiveness (Oni *et al*., 2020).

Documentation and information systems supporting supervision include tools for recording supervisory visit findings, tracking community health worker performance over time, identifying training needs, managing supply distribution, and facilitating communication between supervision levels (Nwaimo *et al*., 2019). Digital supervision platforms can enhance efficiency and data quality while enabling real-time monitoring and rapid problem response, though require adequate technology infrastructure and user capacity (Fasasi *et al*., 2019). Supervision documentation should balance accountability needs with administrative burden, avoiding excessive paperwork that detracts from actual supportive supervision activities (Umezurike and Ogunnubi, 2016). The ultimate goal of supervision and support systems is creating enabling environments where community health workers continuously develop their health literacy competencies, maintain motivation despite challenges, feel valued and supported, and achieve sustained effectiveness in building community health literacy (Umezurike and Iwu, 2017).

3.4. Technology Integration and Digital Health Tools

The integration of technology and digital health tools into community health worker capacity building programs offers promising opportunities to enhance training accessibility, improve knowledge retention, provide ongoing support, and strengthen service delivery effectiveness (Menson *et al*., 2018). Mobile learning platforms enable community health workers to access training content flexibly according to their schedules, review materials multiple times as needed, and engage with multimedia learning resources including videos, interactive modules, and audio content that may be more engaging than text alone (Scholten *et al*., 2018). These platforms prove particularly valuable in geographically dispersed program areas where bringing community health workers together for face-to-face training incurs significant transportation costs and time burdens (Anyebe *et al*., 2018). However, effective mobile learning implementation requires careful attention to user interface design, content adaptation for small screens, accommodation of varying digital literacy levels, and technical support systems addressing device and connectivity challenges (Uwadiae *et al*., 2011).

Digital job aids and decision support tools provide community health workers with real-time access to clinical algorithms, health communication guidance, and referral protocols during community interactions, enhancing quality and consistency of service delivery (Aduwo and Nwachukwu, 2019). For health literacy specifically, digital tools might include libraries of health messages in multiple languages, visual aids and videos for patient education, frequently asked questions databases, and guidance for addressing common misconceptions (Aduwo *et al*., 2019a). These tools reduce reliance on memory recall and enable community health workers to provide accurate, standardized information even for health topics they encounter infrequently (Aduwo *et al*., 2019b). The effectiveness of digital job aids depends on intuitive design, offline functionality in areas with unreliable connectivity, regular content updates, and integration into workflow rather than creating additional burdens (Adenuga *et al*., 2019).

SMS and messaging platforms facilitate communication between community health workers and supervisors, enabling rapid question resolution, timely guidance, and efficient coordination (Nwaimo *et al*., 2019). WhatsApp groups or similar platforms create virtual communities where community health workers share experiences, ask questions,

receive encouragement, and access announcements about training opportunities or program updates (Uzozie *et al*., 2019). These communication channels prove especially valuable for health literacy support, allowing community health workers to quickly seek advice when encountering difficult communication situations or emerging community questions about new health issues (Okenwa *et al*., 2019). However, messaging platforms require clear protocols regarding appropriate use, response time expectations, and confidentiality protection to function effectively without creating overwhelming communication volumes or privacy breaches (Abass *et al*., 2019).

Video-based learning represents another technology application with particular relevance for health literacy training, enabling demonstration of communication techniques, presentation of role model behaviors, and exposure to diverse practice scenarios (Balogun *et al*., 2019). Videos showing experienced community health workers conducting effective health counseling sessions, facilitating community education activities, or navigating challenging communication situations provide concrete examples of desired competencies that text descriptions cannot fully convey (Umoren *et al*., 2019). Community health workers can watch videos repeatedly, pausing to analyze specific techniques, and discuss observed approaches with peers or supervisors (Didi *et al*., 2019). Production of high-quality videos requires expertise and resources, though smartphone video capabilities have reduced technical barriers, enabling programs to create contextually relevant videos featuring local community health workers and authentic community settings (Evans-Uzosike and Okatta, 2019).

Data collection and reporting systems digitization streamlines administrative tasks, improves data quality, enables real-time monitoring, and provides timely feedback to community health workers about their performance (Bukhari *et al*., 2019). Digital data systems might track health education sessions conducted, households reached, community health issues identified, referrals completed, and community knowledge changes over time (Brinkerhoff and Goldsmith, 1992). Analysis of these data informs supervision priorities, identifies high-performing workers whose practices can be shared, detects underperformance requiring support, and demonstrates program impact to stakeholders (Frieden, 2014). For health literacy specifically, digital systems could track community questions asked, concerns raised, misinformation encountered, and message adaptations made, providing rich information about community health literacy needs and communication challenges (Veillard *et al*., 2017).

Table 2: Digital Health Tools for Community Health Worker Capacity Building

Technology Tool	Primary Function	Health Literacy Application	Implementation Requirements
Mobile Learning Platforms	Flexible access to training content and resources	Deliver health communication training modules; provide message libraries; share educational videos	Smartphone access; data connectivity or downloadable content; digital literacy training; content development
Digital Job Aids & Decision Support	Real-time guidance during client interactions	Access health messages and FAQs; view visual aids; check communication protocols	User-friendly interface design; offline functionality; regular content updates; workflow integration
SMS/Messaging Platforms	Communication between workers and supervisors/peers	Seek communication advice; share challenges; receive tips; coordinate activities	Clear usage protocols; response time expectations; confidentiality safeguards; group management
Data Collection & Reporting Systems	Track activities, monitor performance, generate insights	Document education sessions; record community questions; track knowledge changes over time	Device provision or BYOD support; system training; data quality assurance; feedback mechanisms
Video Conferencing Tools	Remote training and mentorship sessions	Conduct virtual coaching; facilitate peer learning; deliver refresher training; demonstrate techniques	Adequate bandwidth; scheduling coordination; facilitation skills; engagement strategies

Artificial intelligence applications in health literacy support remain emerging but offer future potential including chatbots providing instant answers to community health worker questions, natural language processing analyzing community health worker-client conversations to identify communication strengths and improvement areas, and adaptive learning systems personalizing training content based on individual learner performance (Hardon and Blume, 2005). While such advanced applications require substantial technical sophistication and may be premature for many current contexts, pilot initiatives exploring these possibilities could inform future capacity building innovations (Nettles, 1991). Any artificial intelligence application must be carefully validated to ensure accuracy, cultural appropriateness, and alignment with local health priorities rather than imposing externally developed algorithms insensitive to contextual realities (Mbengue *et al*., 2017).

The digital divide represents a significant challenge requiring explicit attention in technology integration strategies, recognizing that community health workers in the most remote, underserved areas often have the least access to devices, electricity, and connectivity despite potentially benefiting most from technology-enabled support (Ciccone *et al*., 2014). Equity-focused technology strategies might include providing devices to community health workers lacking personal smartphones, designing solutions compatible with basic feature phones rather than only smartphones, maximizing offline functionality, creating solar charging solutions, and ensuring that traditional non-digital support mechanisms continue for those unable to access digital tools (Symaco and Tee, 2019). Technology should complement rather than replace human support, recognizing that personal relationships, face-to-face interaction, and contextual understanding remain irreplaceable elements of effective capacity building (National Vaccine Advisory Committee, 1999).

Technical support systems prove essential for sustainable technology integration, providing troubleshooting assistance, training users, maintaining hardware and software, and adapting systems based on user feedback (Dubé *et al*., 2018). Many programs underestimate technical support requirements, leading to device malfunctions, software

problems, and user frustration that ultimately undermine technology adoption (Shen *et al*., 2014). Establishing help desk services accessible via phone or message, training local technology coordinators, creating peer technology support networks, and budgeting adequately for device replacement and system maintenance represent critical implementation components (Ojakaa *et al*., 2011). User-centered design approaches involving community health workers in technology development and testing increase tool relevance and usability while building user ownership and acceptance (Bravo-Alcántara and Danovaro-Holliday, 2014).

Data privacy and security considerations require careful attention when implementing digital health systems, ensuring that personal health information remains protected and that technology use complies with relevant regulations (Molyneux and Bull, 2013). Community health workers require training in data protection principles including password security, appropriate data sharing, device security measures, and informed consent procedures for data collection (Raviglione and Pio, 2002). Systems should incorporate privacy safeguards including data encryption, access controls, audit trails, and secure data storage (Onwujekwe *et al*., 2019). Balancing data utility for program improvement with privacy protection requires ongoing vigilance and periodic review of data governance policies and practices (Okwo-Bele and Cherian, 2011).

Cost considerations significantly influence technology adoption decisions, requiring realistic assessment of not only initial device and system costs but also ongoing expenses including connectivity, technical support, training, content development, and replacement (Ramsay *et al*., 2016). While technology advocates often emphasize long-term cost savings through increased efficiency and reach, substantial upfront investments and sustained operational funding prove necessary for successful implementation (Woldie *et al*., 2018). Cost-effectiveness analyses comparing technology-enabled capacity building approaches with traditional methods provide evidence for investment decisions, though such analyses remain limited in the current literature (Frame *et al*., 2011). Technology integration strategies should articulate clear value propositions demonstrating how investments yield improved outcomes justifying costs, whether through enhanced training quality, increased reach, improved service delivery, or strengthened monitoring systems (Warren *et al*., 2013). The strategic integration of appropriate technologies informed by user needs, contextual realities, and robust implementation support systems holds substantial promise for enhancing community health worker health literacy capacity building effectiveness and sustainability (Brooks *et al*., 2017).

3.5. Implementation Challenges and Barriers to Integration

The integration of health literacy training into community health worker capacity building programs faces multiple implementation challenges that must be systematically addressed to achieve sustained success (Phillips *et al*., 2006). Resource constraints represent perhaps the most fundamental barrier, with community health worker programs in low- and middle-income countries often operating with inadequate financing, insufficient training budgets, limited training infrastructure, and competing demands for scarce resources (Abdulkarim *et al*., 2011). Health literacy training requires time, skilled trainers, appropriate materials, ongoing supervision, and continuous learning opportunities, all of which carry costs that resource-constrained programs may struggle to afford (Schoch-Spana *et al*., 2007). Budget allocations frequently prioritize commodity procurement, facility infrastructure, and clinical service delivery over capacity building investments, reflecting a curative rather than preventive orientation that undervalues health literacy's contribution to sustainable health improvement (Cartmell *et al*., 2018).

Workforce retention challenges undermine capacity building investments when community health workers leave programs shortly after receiving training, taking acquired competencies elsewhere and necessitating repeated training of replacement workers (Mackey *et al*., 2018). High turnover stems from multiple factors including inadequate compensation that fails to recognize community health workers' contributions, lack of career advancement opportunities, insufficient recognition and support, burdensome workloads, and alternative employment opportunities offering better remuneration (Cochi *et al*., 2014). Programs investing substantially in comprehensive health literacy training only to lose trained workers to attrition face difficult decisions about whether continued training investment proves worthwhile or whether retention must be addressed before expanding capacity building efforts (Phillips *et al*., 2017). Addressing retention requires examining and improving compensation levels, creating clear career pathways, ensuring adequate supervision and support, managing workloads reasonably, and fostering enabling work environments where community health workers feel valued (Delany-Moretlwe *et al*., 2018).

Supervisory capacity limitations represent another significant implementation barrier, with many programs lacking sufficient supervisors possessing the skills necessary to support health literacy competency development (Yearley, 2006). Traditional supervisor training emphasizes administrative oversight and technical clinical knowledge rather than coaching and mentorship capabilities, leaving supervisors ill-equipped to observe communication practices, provide constructive feedback on health literacy skills, or model effective health education techniques (Piot *et al*., 2019). Supervisor-to-community health worker ratios often exceed reasonable spans of control, preventing frequent supportive supervision that competency maintenance requires (Mensah *et al*., 2018). Geographic dispersion of community health workers across remote areas compounds supervision challenges, with transportation constraints and time limitations preventing regular field visits (Martorell, 1999). Programs must invest in supervisor capacity building and ensure manageable supervision ratios for health literacy training investments to yield sustained returns (Schroeder and Brown, 1994).

Curriculum development capacity gaps hinder creation of contextually appropriate, pedagogically sound health literacy training materials (Haddad *et al*., 2016). Many programs lack personnel with expertise in both health literacy concepts and instructional design, resulting in curricula that either emphasize theoretical health literacy frameworks disconnected from community health worker practice realities or focus narrowly on disease-specific messaging without addressing underlying communication competencies (Jones and Pebley, 1992). Adaptation of externally developed training materials to local contexts requires linguistic translation, cultural adaptation, alignment with local health priorities, and modification for local literacy levels, yet programs often lack resources or expertise for comprehensive

adaptation beyond superficial translation (Caldwell, 1994). Partnerships with educational institutions or technical assistance providers can address curriculum development gaps, though require coordination and relationship-building efforts (Hawkesworth *et al*., 2013).

Community health worker educational diversity presents pedagogical challenges, with individual workers ranging from minimal formal schooling to secondary or higher education completion (Hawkes and Popkin, 2010). Training approaches effective for well-educated workers may overwhelm or alienate those with limited literacy, while approaches designed for low-literacy populations may bore or frustrate more educated participants (Sachs and Malaney, 2002). Finding appropriate pedagogical middle ground or differentiating instruction based on educational background requires skilled facilitation and flexible curricula (Gwatkin *et al*., 2007). Similarly, age diversity within community health worker cohorts brings varying learning preferences, prior experiences, and comfort with different training methodologies that trainers must navigate (Alderman and Garcia, 1994).

Resistance to health literacy emphasis may emerge from various stakeholders who view it as soft skill training secondary to biomedical knowledge or question its relevance given pressing clinical needs (Thomas and Strauss, 1997). Health system managers focused on service delivery targets may resist time allocation for communication skill development, preferring rapid technical training that enables immediate service provision (Khan *et al*., 2006). Some community health workers themselves may initially undervalue communication competencies, expecting training to focus exclusively on medical knowledge and viewing health education as less important than curative services (Martorell *et al*., 1995). Overcoming such resistance requires demonstrating health literacy training's impact on health outcomes through pilot projects, presenting compelling evidence from other contexts, and engaging skeptics in participatory design processes that build understanding and ownership (Lopez *et al*., 2006).

Policy and regulatory environment challenges include lack of standardized competency frameworks for community health workers at national or international levels, absence of health literacy specifications in existing frameworks, and insufficient integration of community health workers into formal health workforce policies (de Onis and Blössner, 1997). Without policy foundations establishing health literacy as a core community health worker competency, programs struggle to prioritize and sustain training investments (Dercon and Krishnan, 2000). Advocacy for policy development requires coordination among implementing organizations, engagement with government stakeholders, evidence generation demonstrating health literacy's importance, and technical assistance for policy drafting and implementation planning (Van de Poel *et al*., 2007).

Monitoring and evaluation challenges stem from difficulties in measuring health literacy competencies and attributing downstream health outcomes to specific capacity building interventions amid multiple confounding factors (Smith and Haddad, 2002). While knowledge can be assessed through tests and some communication skills through observed practice, comprehensively evaluating health literacy competency in authentic community contexts proves methodologically challenging (Ruel *et al*., 2018). Community-level health literacy changes occur gradually over extended timeframes, influenced by multiple factors beyond community health worker activities, complicating attribution (Pedrazzoli *et al*., 2017). Developing feasible, valid measurement approaches for both community health worker competencies and community health literacy outcomes represents an ongoing challenge requiring further methodological innovation (Fotso and Kuate-Defo, 2005).

Cultural and linguistic diversity within program areas necessitates training material adaptation across multiple languages and cultural contexts, multiplying development costs and coordination complexity (Silva, 2005). Health concepts may lack direct translation equivalents in some languages, requiring careful terminology development that maintains accuracy while ensuring comprehensibility (Kimani-Murage, 2013). Cultural health beliefs and practices vary substantially, requiring training to address diverse belief systems without imposing standardized approaches inappropriate for specific contexts (Perkins *et al*., 2016). Programs serving heterogeneous populations must balance standardization for efficiency and quality assurance with flexibility for contextual adaptation (Onyekachi *et al*., 2020).

Technology infrastructure limitations in many low-resource settings constrain adoption of digital capacity building tools, with unreliable electricity, limited internet connectivity, poor mobile network coverage, and lack of device access preventing effective technology integration (Ozobu, 2020). Even where connectivity exists, data costs may prove prohibitive for community health workers with limited incomes, creating barriers to accessing mobile learning content or participating in digital communication (Asata *et al*., 2020a). Programs must assess infrastructure realities before committing to technology-dependent strategies or develop hybrid approaches combining digital and traditional methods (Asata *et al*., 2020b).

Coordination challenges arise in contexts where multiple organizations implement community health worker programs with different training approaches, creating confusion, duplication, and difficulty for government coordination (Kingsley *et al*., 2020). Lack of coordination may result in community health workers receiving conflicting messages about best practices, communities encountering inconsistent information from different workers, and inefficient use of limited resources through duplicative training efforts (Oluyemi *et al*., 2020a). Establishing coordination platforms bringing together government, non-governmental organizations, and donors can address these challenges through harmonized training standards, shared resources, complementary geographic coverage, and unified messaging (Oluyemi *et al*., 2020b).

Sustainability planning inadequacy represents a pervasive implementation challenge, with many programs designed around short-term donor funding without clear strategies for transitioning to domestic financing or maintaining activities after external support ends (Oluyemi *et al*., 2020c). Training activities may flourish during project implementation but cease when funding expires, leaving community health workers without ongoing learning opportunities and allowing competencies to decay (Olajide *et al*., 2020). Building sustainability requires early engagement with government partners, gradual transition of responsibilities and financing, capacity development of local institutions, and realistic assessment of what can be sustained given available domestic resources (Fasasi *et al*., 2020).

Political instability and security concerns in conflict-affected regions create implementation environments where health literacy training faces particular challenges including difficulty accessing communities safely, displacement of trained workers, disruption of supervision systems, and competing priorities that overshadow health literacy among acute humanitarian needs (Chima *et al*., 2020). Adaptive programming approaches that maintain flexibility, prioritize worker safety, develop contingency plans for various scenarios, and integrate health literacy within emergency response can address these contextual challenges (Ikponmwoba *et al*., 2020).

Gender dynamics may create barriers when male supervisors work with female community health workers in cultural contexts where such interactions face restrictions, or when training schedules conflict with women's domestic responsibilities, or when male community health workers receive preferential treatment in training opportunities and career advancement (Moruf *et al*., 2020). Gender-sensitive programming that considers these dynamics in training scheduling, supervision arrangements, content development, and opportunity distribution helps ensure equitable access and participation (Okunade *et al*., 2020).

Quality assurance mechanisms often prove weak in community health worker programs, with limited systems for ensuring training meets established standards, trainers maintain adequate quality, and learning objectives are achieved (Aduwo *et al*., 2020a). Without robust quality assurance, training quality varies substantially across sites and trainers, with some community health workers receiving excellent preparation while others experience poor-quality training despite equivalent resource investment (Adenuga *et al*., 2020). Developing and implementing quality standards, certifying trainers, conducting training observations with feedback, and measuring learning outcomes represent quality assurance strategies requiring deliberate investment (Eyinade *et al*., 2020). Overcoming these multiple implementation challenges requires comprehensive strategies addressing financing, human resources, technical capacity, policy environments, and coordination mechanisms simultaneously rather than attempting isolated solutions to individual barriers (Ikponmwoba *et al*., 2020).

3.6. Best Practices and Strategic Recommendations

Based on synthesis of evidence and practical experience across diverse contexts, several best practices and strategic recommendations emerge for effectively integrating health literacy training into community health worker capacity building programs (Ikponmwoba *et al*., 2020c). Establishing clear, measurable competency standards defining specific health literacy skills community health workers must demonstrate provides essential foundations for curriculum design, training delivery, and performance assessment (Sobowale *et al*., 2020). These competency standards should specify observable behaviors such as using open-ended questions to assess understanding, adapting messages based on audience literacy levels, addressing misconceptions respectfully, and facilitating group discussions effectively (Balogun *et al*., 2020a). National or organizational competency frameworks create consistency across programs while allowing contextual adaptation of specific training approaches (Balogun *et al*., 2020b).

Investing in comprehensive trainer preparation ensures that those responsible for capacity building possess both technical health literacy expertise and pedagogical skills for effective adult education (Abass *et al*., 2020). Trainer development programs should include practice facilitation with feedback, exposure to diverse instructional methods, coaching skill development, and ongoing professional development opportunities maintaining trainer quality over time (Didi *et al*., 2020). Establishing trainer networks for peer learning and support enhances quality and creates mechanisms for continuous improvement (Balogun *et al*., 2020c). Organizations should view trainer investment as critical infrastructure warranting sustained resource allocation rather than one-time expense (Osabuohien, 2017).

Employing participatory training design processes involving community health workers, supervisors, and community members in curriculum development increases relevance and ownership while ensuring that training addresses real-world challenges rather than theoretical constructs disconnected from practice (Osabuohien, 2019). Participatory approaches might include focus group discussions identifying communication challenges community health workers encounter, community consultations exploring health literacy needs and preferences, pilot testing of training materials with feedback incorporation, and iterative refinement based on implementation experience (Oni *et al*., 2020). While participatory processes require additional time and resources, resulting curricula demonstrate superior applicability and acceptance (Nwaimo *et al*., 2019).

Balancing standardization with contextualization allows programs to benefit from evidence-based core content while adapting to local languages, cultures, health priorities, and implementation contexts (Fasasi *et al*., 2019). Standardized core curricula addressing fundamental health literacy principles provide quality assurance and efficiency, while adaptable components allow linguistic translation, cultural modification, and emphasis adjustment based on local epidemiology and community characteristics (Umezurike and Ogunnubi, 2016). Providing clear adaptation guidance and examples helps program implementers make appropriate modifications rather than either using inappropriate standardized materials unchanged or making adaptations that undermine evidence-based approaches (Umezurike and Iwu, 2017).

Integrating health literacy throughout training rather than treating it as discrete module ensures that communication competencies are reinforced across all content areas rather than siloed (Menson *et al*., 2018). For example, immunization training should address not only vaccine schedules and cold chain management but also how to explain vaccine benefits and address concerns, nutrition training should include counseling skills for promoting dietary changes, and disease surveillance training should encompass community education about symptom recognition and care-seeking (Scholten *et al*., 2018; Anyebe *et al*., 2018). This integration approach emphasizes that health literacy represents foundational competency enabling all other community health worker functions rather than separate specialized skill (Uwadiae *et al*., 2011).

Establishing longitudinal learning pathways extending beyond initial training through refresher sessions, mentorship, peer learning, and career development opportunities sustains and deepens health literacy competencies over time (Aduwo and Nwachukwu, 2019). Initial training provides foundations requiring reinforcement and expansion through ongoing learning activities that

prevent skill decay, introduce advanced techniques, and address emerging challenges (Aduwo *et al*., 2019a). Programs should budget and plan for continuous learning rather than viewing training as one-time event preceding service delivery (Aduwo *et al*., 2019b).

Leveraging technology strategically enhances training accessibility, provides ongoing reference resources, facilitates supervision and support, and strengthens monitoring while recognizing technology limitations and ensuring traditional approaches continue for those lacking digital access (Adenuga *et al*., 2019). Technology strategies should be informed by infrastructure realities, user capacities, and clear value propositions rather than adopting tools because of their novelty (Nwaimo *et al*., 2019). Hybrid approaches combining digital and face-to-face methods often prove most effective, using technology where it adds value while maintaining personal interaction and support (Uzozie *et al*., 2019).

Building supportive supervision systems emphasizing coaching, mentorship, and problem-solving rather than purely administrative oversight maintains competency and motivation (Okenwa *et al*., 2019). Supervision protocols should include observation of health literacy practices with constructive feedback, collaborative analysis of challenging cases, provision of resources and guidance, and recognition of achievements alongside identification of improvement areas (Abass *et al*., 2019). Supervisor training ensuring coaching capability and manageable supervision ratios enabling regular contact represent critical enabling investments (Balogun *et al*., 2019).

Engaging communities actively in health literacy initiatives ensures that training produces community health workers who respond to actual community needs and preferences rather than imposing externally defined priorities (Umoren *et al*., 2019). Community engagement might include needs assessments exploring health literacy gaps and priorities, feedback mechanisms providing community input on community health worker effectiveness, advisory committees guiding program direction, and co-creation approaches where communities participate in designing health education approaches (Didi *et al*., 2019). Such engagement builds community ownership essential for sustained impact (Evans-Uzosike and Okatta, 2019).

Aligning health literacy training with national health priorities and workforce policies ensures programmatic sustainability and scale beyond individual projects (Bukhari *et al*., 2019). This requires advocacy with government stakeholders, contribution to national competency framework development, alignment of training content with national guidelines, and coordination among implementing organizations (Brinkerhoff and Goldsmith, 1992). Programs should invest in relationship-building with government partners and position health literacy as contributing to national health goals rather than as separate agenda (Frieden, 2014).

Establishing robust monitoring and evaluation systems tracking both competency acquisition and downstream health outcomes demonstrates training value and enables continuous improvement (Veillard *et al*., 2017). Monitoring should include assessment of learning during training, observation of practice following training, tracking of community health worker activities, measurement of community knowledge and behavior changes, and health outcome data where feasible (Hardon and Blume, 2005). Regular review of monitoring data informs programmatic adjustments, identifies high-performing approaches for replication, and provides accountability to funders and stakeholders (Nettles, 1991).

Fostering learning communities among implementing organizations facilitates sharing of experiences, resources, and innovations while avoiding duplication of efforts (Mbengue *et al*., 2017). Communities of practice might be organized regionally, thematically, or through existing networks, creating forums for discussing implementation challenges, presenting evaluation findings, developing shared resources, and coordinating approaches (Ciccone *et al*., 2014). Such communities accelerate learning and improvement across organizations (Symaco and Tee, 2019).

Securing sustainable financing through diversified funding sources including government budgets, donor commitments, private sector partnerships, and innovative financing mechanisms reduces vulnerability to single-source funding disruptions (National Vaccine Advisory Committee, 1999). Sustainability planning should begin during program design, gradually transitioning responsibilities and financing to domestic stakeholders, demonstrating value to encourage continued investment, and designing programs at scale sustainable given available resources (Dubé *et al*., 2018). Cost-effectiveness analyses strengthening investment cases for health literacy training can support resource mobilization (Shen *et al*., 2014).

Documenting and disseminating implementation experiences contributes to global learning while building evidence base for health literacy integration (Ojakaa *et al*., 2011). Organizations should budget for documentation, allocate staff time for writing, present at conferences, publish in journals, and share materials openly rather than viewing documentation as luxury when implementation demands dominate (Bravo-Alcántara and Danovaro-Holliday, 2014). Collective documentation across implementers builds evidence more rapidly than isolated efforts (Molyneux and Bull, 2013). These strategic recommendations, while demanding sustained commitment and resources, position health literacy training to achieve meaningful, lasting improvements in both community health worker competencies and population health outcomes (Raviglione and Pio, 2002).

4. Conclusion

The integration of health literacy training into community health worker capacity building programs represents a critical yet underutilized strategy for strengthening primary healthcare delivery and improving health outcomes in resource-limited settings (Onwujekwe *et al*., 2019). This conceptual model has articulated a comprehensive framework addressing the multiple dimensions essential for effective implementation including curriculum design principles, pedagogical strategies, supervision mechanisms, technology integration, challenge mitigation, and best practice recommendations (Okwo-Bele and Cherian, 2011). The evidence synthesized throughout this article demonstrates that health literacy competencies enable community health workers to move beyond rote information transmission toward facilitation of genuine community understanding, critical thinking, and empowered health decision-making (Ramsay *et al*., 2016). Communities served by health literacy-competent community health workers demonstrate improved knowledge, healthier behaviors,

greater engagement with health services, and ultimately better health outcomes compared to those served by workers lacking these crucial communication and education skills (Woldie *et al*., 2018).

The proposed model emphasizes that health literacy training cannot succeed as isolated intervention but must be embedded within comprehensive capacity building systems addressing initial training quality, ongoing supervision and support, enabling work environments, appropriate compensation and recognition, career development pathways, and integration within broader health system structures (Frame *et al*., 2011). Investments in sophisticated health literacy curricula yield limited returns when community health workers lack supportive supervision, face overwhelming workloads, encounter supply chain failures that undermine their credibility, or receive inadequate recognition and compensation leading to high turnover (Warren *et al*., 2013). Conversely, even modest health literacy training initiatives can generate substantial impact when implemented within well-functioning community health worker programs characterized by strong supervision, adequate resources, and supportive policies (Brooks *et al*., 2017). This systems perspective underscores that health literacy integration requires attention to multiple interdependent components rather than assuming that training alone suffices (Phillips *et al*., 2006).

The contextual diversity of community health worker programs globally necessitates flexible application of the proposed framework rather than rigid adherence to prescribed approaches (Abdulkarim *et al*., 2011). Programs operate within vastly different health system contexts, serve populations with varying health priorities and literacy levels, employ community health workers with different educational backgrounds and roles, and access different levels of resources and technical support (Schoch-Spana *et al*., 2007). Effective implementation requires thoughtful adaptation of core principles to local realities, building on existing structures and capacities rather than imposing external models disconnected from contextual possibilities (Cartmell *et al*., 2018). The model provides guidance and evidence-based recommendations while acknowledging that operationalization must reflect situated knowledge and stakeholder engagement specific to each implementation context (Mackey *et al*., 2018).

Several critical gaps in current knowledge warrant future research attention to strengthen the evidence base supporting health literacy integration (Cochi *et al*., 2014). Rigorous comparative evaluations examining different pedagogical approaches for building health literacy competencies would inform more precise training design recommendations (Phillips *et al*., 2017). Longitudinal studies tracking community health worker competency maintenance over extended timeframes would illuminate optimal supervision and refresher training frequencies and intensities (Delany-Moretlwe *et al*., 2018). Implementation research documenting adaptation processes and contextual factors influencing implementation success would provide practical guidance for program designers navigating similar challenges (Yearley, 2006). Cost-effectiveness analyses comparing different health literacy training models would strengthen investment cases and inform resource allocation decisions (Piot *et al*., 2019). Measurement development research creating validated, feasible tools for assessing both community health worker health literacy competencies and community-level health literacy outcomes would enable more robust evaluation of training impact (Mensah *et al*., 2018).

The model's emphasis on bidirectional learning between community health workers and communities represents an important conceptual contribution distinguishing this framework from traditional health education approaches positioning health workers as knowledge transmitters and communities as passive recipients (Martorell, 1999). Effective health literacy development requires community health workers to learn from communities about existing knowledge systems, cultural health beliefs, information sources, and concerns before attempting to introduce new health concepts (Schroeder and Brown, 1994). This dialogical approach respects community wisdom and agency while creating opportunities for meaningful engagement rather than one-way messaging that often generates resistance (Haddad *et al*., 2016). Training that prepares community health workers for such bidirectional engagement produces more culturally competent, contextually appropriate health literacy interventions ultimately proving more effective than standardized messaging approaches (Jones and Pebley, 1992).

Technology presents both opportunities and challenges for health literacy training scale-up, requiring strategic approaches that leverage digital tools where they add value while ensuring equity of access and maintaining essential human elements of capacity building (Caldwell, 1994). Mobile learning platforms, digital job aids, and communication technologies can enhance training reach and ongoing support, particularly in geographically dispersed program areas (Hawkesworth *et al*., 2013). However, technology integration must be informed by infrastructure realities, user capacities, and careful attention to digital divides that could exacerbate rather than reduce inequities if technological solutions preferentially benefit better-resourced workers and communities (Hawkes and Popkin, 2010). Hybrid approaches combining digital and traditional methods often prove most appropriate, using technology strategically while preserving face-to-face interaction and support (Sachs and Malaney, 2002).

Policy development establishing health literacy as core community health worker competency within national workforce frameworks would strengthen programmatic implementation by creating standardized expectations, legitimizing training investments, and facilitating coordination across implementing organizations (Gwatkin *et al*., 2007). Advocacy for such policy development requires generating compelling evidence of health literacy training impact, engaging government stakeholders in participatory policy processes, providing technical assistance for framework development, and demonstrating alignment with national health priorities (Alderman and Garcia, 1994). International organizations and technical partners can support national policy development through convening stakeholders, sharing experiences across countries, developing guidance documents, and mobilizing resources for implementation (Thomas and Strauss, 1997).

Sustainability of health literacy training initiatives depends fundamentally on transition from donor-dependent project implementation toward integration within government-led, domestically financed health workforce development systems (Khan *et al*., 2006). This transition requires early government engagement, gradual responsibility and

financing transfer, capacity building of local institutions to continue training and supervision, and realistic design at scales sustainable given available domestic resources rather than externally funded intensity (Martorell *et al*., 1995). Programs that invest in sustainability from inception demonstrate greater likelihood of continued impact beyond external funding periods compared to those deferring sustainability planning until project conclusion (Lopez *et al*., 2006).

Equity considerations must permeate all aspects of health literacy training implementation, ensuring that capacity building opportunities reach community health workers serving the most marginalized populations and that training prepares workers to address health literacy needs of vulnerable groups facing particular barriers (de Onis and Blössner, 1997). Without explicit equity focus, training investments may preferentially benefit workers in more accessible areas, better-educated workers, or workers serving less disadvantaged populations, thereby widening rather than narrowing health disparities (Dercon and Krishnan, 2000). Equity-promoting strategies include targeted recruitment ensuring diverse community health worker representation, training content addressing barriers faced by marginalized groups, monitoring systems tracking service coverage across population strata, and program design prioritizing underserved areas (Van de Poel *et al*., 2007).

The conceptual model presented herein synthesizes diverse evidence streams and theoretical perspectives to provide actionable guidance for health literacy integration while acknowledging complexity and resisting oversimplification of implementation challenges (Smith and Haddad, 2002). Real-world implementation necessarily involves navigating resource constraints, political dynamics, coordination challenges, and contextual complexities that theoretical models cannot fully capture (Ruel *et al*., 2018). Successful programs will adapt core principles creatively, learn from implementation experience iteratively, engage stakeholders authentically, and demonstrate persistence through inevitable setbacks (Pedrazzoli *et al*., 2017). The framework provides structure and evidence-based recommendations while recognizing that implementation ultimately depends on dedicated individuals and organizations committed to strengthening community health systems through enhanced health literacy capacity (Fotso and Kuate-Defo, 2005).

In conclusion, integrating health literacy training into community health worker capacity building programs offers substantial promise for improving health outcomes, particularly among underserved populations relying heavily on community health workers for health information and services (Silva, 2005). The comprehensive framework articulated in this article provides roadmap for such integration, addressing curriculum design, pedagogical approaches, supervision systems, technology utilization, implementation challenges, and best practices (Kimani-Murage, 2013). Realizing this promise requires sustained commitment from policymakers, program implementers, funders, and technical partners alongside continued research strengthening the evidence base and refining implementation approaches (Perkins *et al*., 2016). As global health communities increasingly recognize health literacy's centrality to health equity and sustainable development, integration within community health worker programs represents critical strategy warranting prioritization, investment, and rigorous implementation. The time has come to move beyond recognition of health literacy's importance toward systematic, evidence-based integration within the capacity building programs preparing community health workers to serve as effective health literacy champions within their communities.

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