Bridging the Gap: A Policy Framework for Strengthening Industry–Academia Collaboration in CPR Training and Innovation in Ghana.

Kingsley Agyemang[1]; Michael Darko[2;] Bernard Ribeiro[3]

[1](PhD; Brunel University, UK); (PhD; University of Leicester);
[3](M.Sc., R&A Solutions)

Abstract
Background:
Cardiopulmonary resuscitation (CPR) is an essential life-saving technique; yet, the quality and accessibility of training vary significantly among health institutions in Ghana. Inadequate policy coherence, disjointed funding, and absence of certification systems have impeded extensive adoption. The extent of academia–industry collaboration in Ghana's CPR training remains underexplored. This study aims to provide a policy framework that enhances collaboration between the business sector and academia in CPR training and innovation in Ghana.
Method:
A three-round Delphi survey was executed with multidisciplinary experts from academia, healthcare, government, and industry (n = 40). Round 1 collected diverse viewpoints on obstacles and solutions, whereas Rounds 2 and 3 honed priorities and evaluated degrees of consensus using a ≥70% criterion. Quantitative data were studied descriptively, while qualitative inputs were thematically integrated to produce meaningful policy recommendations.
Results:
Consensus gradually intensified during the rounds. In Round 3, the primary policy goal indicated was enhancing collaboration among academics, industry, and government (30%), followed by increasing financing (25%), and expanding rural training coverage (22.5%). Public–private partnerships (PPPs) were affirmed as the principal financing vehicle, with a 75% consensus, surpassing the agreement criterion. A robust consensus (80%) was attained on the incorporation of CPR education within medical and nursing curriculum, underscoring the necessity for early professional training. While workplace training programs (65%) and certification standards (67.5%) received considerable backing, they did not achieve consensus, highlighting the need for additional policy discussions.
Conclusion:
The Delphi approach achieved unequivocal stakeholder agreement on the creation of a multi-sectoral, curriculum-oriented, and performance-evaluated CPR teaching model for Ghana. Findings correspond with global research highlighting accreditation, sustainable financing, and ongoing education as fundamental components for enhancing resuscitation capacity. Implementing these recommendations through a PPP-supported financing and curricular integration could strengthen Ghana's emergency preparedness and reduce preventable cardiac deaths
Key words: CPR Training; Public-Private Partnerships, Stakeholder Collaboration

I. INTRODUCTION

Cardiopulmonary resuscitation (CPR) is essential for emergency responses to out-of-hospital cardiac arrests (OHCA), a major public health concern globally and in Ghana (Memenga and Sinning, 2024; Guetterman et al., 2023). Cardiovascular diseases are among the primary causes of mortality in Ghana, underscoring the need for effective bystander CPR intervention (Doku et al., 2024). The rate of survival for out-of-hospital cardiac arrest (OHCA) in low- and middle-income countries, including Ghana, are critically low, fluctuating between 5% to 10%. This is mostly due to limited public awareness, poor training, and the inefficient integration of innovative approaches into community health systems (Werner et al., 2024; Thibodeau et al., 2022).

The Community-based Health Planning and Services (CHPS) strategy, launched by the Ghana Health Service in 1999, constitutes a significant reform designed to attain universal health coverage via community-level health care (Adusei et al., 2024). The concept prioritizes community engagement, local resource mobilization,

and culturally attuned care, ultimately enhancing access to mother and child health services, immunization, and disease surveillance.

Nonetheless, although CHPS compounds have broadened access to vital healthcare, their emphasis on emergency and life-saving procedures, such as cardiopulmonary resuscitation (CPR), is still constrained. The majority of Community Health Officers and volunteers receive training mostly in preventative and fundamental curative services, with minimal exposure to acute care or emergency response protocols (Adusei et al., 2024). This disparity affects the prompt care of sudden cardiac arrests and trauma-related emergencies in communities. Incorporating CPR and additional first-response skills into CHPS training might substantially fortify Ghana's pre-hospital emergency care system, augment community resilience, and reconcile the current disparity between preventive and emergency health services.

Collaboration between companies and universities may offer a viable solution to address these inadequacies by promoting innovation in CPR instructional techniques, creating accessible training resources, and aligning regulatory frameworks with public health requirements (Baghi et al., 2024). These alliances have significantly transformed industrialized nations, where collaborations among universities, medical device firms, and governmental bodies have resulted in scalable training initiatives and technology-driven solutions, including virtual simulations, automated feedback mannequins, and community-based defibrillator programs (Dinesen et al., 2016).

In Ghana, the amalgamation of academic research, industrial innovation, and public health practice is still nascent (Etzkowitz and Zhou, 2017). Despite the increasing involvement some institutions and Universities, these initiatives are seldom aligned with industrial or public health implementation strategies. Industrial entities frequently lack systematic frameworks to convert academic research into commercially viable goods or community-based initiatives. Likewise, public health agencies, although possessing extensive field data and policy expertise, rarely engage with academia to collaboratively develop evidence-based innovations.

The expanding emergency medical network in the country, bolstered by initiatives such as the National Ambulance Service (NAS) and the Emergency Medicine Training Programme, offers a potential basis for such integration. Despite these efforts, CPR readiness remains low due to weak intersectoral coordination, fragmented funding, and limited integration of training into primary health systems

Triple Helix Model more explicitly connects academics, *industry, and government*, could expedite the advancement and distribution of contextually relevant CPR breakthroughs (Fidanoski et al., 2022). For example, universities might spearhead applied research and pilot initiatives, industry could allocate resources to scalable CPR technology and simulation tools, and public health organizations could integrate these interventions into established systems like CHPS and NAS. Enhancing this connection not only guarantees improved CPR outcomes but also corresponds with Ghana's overarching objectives of establishing a resilient and innovation-oriented healthcare system capable of addressing both preventive and emergency health requirements.

II.   Statement of the Problem

Although Ghana possesses growing academic capacity and industry potential, limited institutional mechanisms for translating research into practice continue to constrain CPR innovation and implementation (Stange, 2009; Etzkowitz & Zhou, 2017).

The essence of the issue lies in a systematic breakdown inside the knowledge translation process, marked by multiple interconnected challenges. In Ghana, academic research is frequently motivated by personal scholarly interests rather than the urgent practical requirements of the Ghana Health Service (GHS) or the innovative capabilities of local industry (Abdulai, 2018; Yeboah & Kavaarpuo, 2019). Funding arrangements primarily facilitate individual research studies until publication, with minimal to no resources allocated for the essential "valley of death" phase, which encompasses the expensive and perilous processes of prototyping, validation, and scaling discoveries (OECD, 2021).

Furthermore, there is an absence of comprehensive national policies and incentives, like tax incentives, innovation grants, or technology-transfer mechanisms, to promote industry investment in local research and development (R&D) for public health solutions (Suchman, Hart & Montagu, 2018).

Despite the availability of pertinent research, the public health system frequently lacks the institutional capacity, financial resources, and technical knowledge necessary for large-scale implementation of findings (Adusei et al., 2024; Doku et al., 2024). Simultaneously, local enterprises sometimes lack the research and development infrastructure and absorptive capacity necessary to adapt and commercialize academic innovations into viable health goods, like diagnostics, vaccinations, or digital health technologies (Baghi et al., 2024; Etzkowitz & Zhou, 2017).

This fragmentation engenders a contradiction wherein Ghanaian scholars do research on domestic health issues, while the healthcare system remains significantly reliant on externally devised and frequently unsuitable technologies and practices (Asare et al., 2023). Although industrialized nations have effectively utilized university–industry–government partnerships to advance scalable CPR education, simulation-based learning, and

digital emergency response systems (Dinesen et al., 2016), Ghana's disjointed collaboration framework has hindered innovation, training, and policy coherence. In the absence of targeted initiatives to integrate CPR training into the Community-based Health Planning and Services (CHPS) framework and to enhance cross-sectoral collaboration, the nation faces the risk of continuing preventable fatalities from cardiac arrest and jeopardizing wider national objectives related to universal health coverage and health system resilience.

Research Objective
The study aims to develop a policy framework that strengthens collaboration between business and academia in CPR training and innovation in Ghana.

III.   LITERATURE REVIEW

Understanding CPR is a critical factor in its use; hence, several studies have aimed to evaluate understanding of this life-saving technique. Vural et al. (2017) performed a research to evaluate nurses' understanding of the 2010 CPR recommendations in Iran. The findings revealed that 20.2% of nurses exhibited exceptional awareness, 65.4% demonstrated good awareness, 14% showed moderate awareness, and 3% displayed poor awareness. The data indicated no significant link between awareness levels and characteristics like age, job experience, or graduate degree. Nurses with prior CPR training, experience in doing CPR, or observation of CPR operations exhibited markedly elevated awareness levels ($p < 0.001$).

Likewise, Jarrah et al. (2019) examined public awareness, knowledge, and attitudes about basic life support (BLS) in Jordan. The research revealed that just 29% of participants had undergone CPR instruction, with 23% of them obtaining their information from media sources. Significantly, 88.3% of respondents indicated a readiness to administer CPR to a family member without reluctance, underscoring a favourable disposition towards CPR despite no formal training.

The study in Ghana reveals major gaps in CPR training and implementation. Research has highlighted inadequate public awareness of CPR, limited training opportunities for both healthcare professionals and laypersons, and a lack of standardised training protocols. Asare (2019) examined CPR awareness among students at the University of Ghana by surveying 350 people from four residential halls. The findings indicate that 34.4% had no prior knowledge of CPR, while among those who were aware, films and television shows were the most common sources at 32%. Only 13.4% has formal CPR training, mostly from the College of Health Sciences (44.2%). Students who had instruction exhibited significantly higher CPR knowledge ratings ($M = 5.2, SD = 1.8$) compared to their untrained peers ($M = 3.8, SD = 2.2$). Demographic characteristics, including age, gender, academic year, and religion, did not significantly predict CPR knowledge.

Anto-Ocrah et al. (2020) assessed Ghanaians' comprehension and views of bystander CPR in relation to the country's developing emergency medical system. The findings demonstrated that healthcare professionals exhibited much greater understanding of CPR than laypersons (96.5% vs. 68.1%; $p < 0.001$). Overall, 85% of participants recognised chest compressions as an element of CPR, whereas more than 70% considered mouth-to-mouth resuscitation essential. Fewer than 10% exhibited hesitance to do CPR, mostly due to inadequate skills (44.9%) and apprehension of potential damage (25.5%). Notably, 25% of EMS staff said that they had never received CPR training. In the event of a fall, 62% of participants would call an ambulance, whilst 32.6% would choose for a taxi.

The study highlights gaps in CPR training and the need for improved public and professional education to increase emergency response in Ghana.

Gyaase et al. (2023) aimed to assess the comprehension and execution of basic life support (BLS) among healthcare practitioners in the Upper Denkyira East Municipality, Central Region of Ghana. The study evaluated healthcare professionals' awareness, skills, and use of Basic Life Support in emergency situations, emphasising inadequacies in training and the need for more education and practical implementation. It is clear from the review that existing studies emphasize knowledge and awareness but seldom examine institutional collaboration models or policy mechanisms to scale CPR training in Ghana

Conceptual Framework for the Study
This study's conceptual framework is founded on the interaction among awareness, training, stakeholder engagement, and policy interventions to enhance CPR training and innovation via industry-academia partnerships. Prior research (e.g., Vural et al., 2017; Jarrah et al., 2019) underscores the significance of training and exposure in enhancing CPR awareness and proficiency, along with the necessity of public and professional involvement in maintaining CPR education.

Conceptual Framework: Strengthening CPR Training through Industry-Academia Collaboration
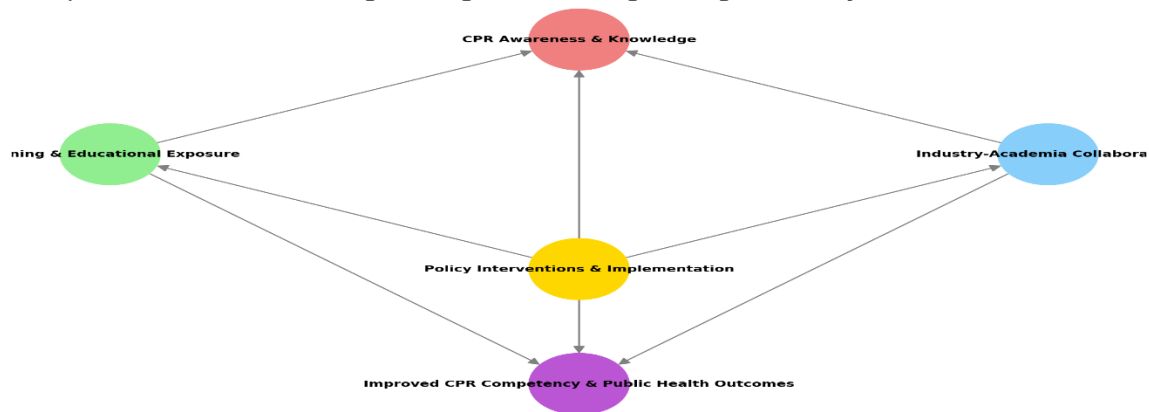
IV. METHODOLOGY

This study used a qualitative research methodology integrated with the Delphi technique to examine and develop policy frameworks designed to enhance collaboration between industry and academics in CPR education and innovation in Ghana. The qualitative technique adeptly captures many stakeholder perspectives on intricate health system challenges, providing depth and context to the cooperation gap (Braun & Clarke, 2019).

The Delphi method improved this by facilitating systematic consensus-building among experts, an established method for policy formation in public health (Zartha Sossa et al., 2019). The study concentrates on four critical stakeholder groups integral to CPR training and innovation: academia from tertiary institutions (lecturers and students); healthcare practitioners affiliated with the National Ambulance Service (NAS) and Community-based Health Planning and Services (CHPS); policymakers from the Ministry of Health (MoH); and the general public. A purposive sampling strategy was used to choose 40 participants, including 10 persons from each group, based on their proficiency and influence in CPR-related fields (Etikan et al., 2016). This sample size balances depth of insight with practicality, ensuring saturation of qualitative data as recommended in health policy research (Hennink et al., 2019).

Data was collected throughout two iterative phases. Phase 1 included conducting an online qualitative semi-structured interviews with all 40 participants to explore perspectives on current industry-academia collaboration, challenges to CPR instructional innovation, and potential policy remedies. Phase 2 used the Delphi Method to engage the same 40 participants in a three-round process designed to enhance policy recommendations. Round one distributed anonymised interview data through an online questionnaire, requesting individuals to prioritise and provide input on proposed collaboration strategies. Round two presented revised suggestions based on feedback from Round one, refining options through consensus (≥70% agreement), while Round three concluded with the finalisation of the policy framework through virtual consensus meetings. The Delphi technique, adapted from global health policy research, enabled iterative improvement and stakeholder involvement (Avery et al., 2019). The qualitative interview data were examined using thematic analysis using Braun and Clarke's (2019) six-step methodology.

Table 1. *Summary of Research Methods*

Phase	Purpose	Participants	Data Collection Method	Analytical Approach	Key Outcomes
Phase 1: Exploratory Interviews	To explore participants' perspectives on current industry–academia collaboration, challenges in CPR instructional innovation, and possible policy interventions.	40 participants (academics, industry experts, health professionals, and policy actors)	Online qualitative semi-structured interviews conducted via virtual platforms.	Thematic analysis following Braun and Clarke's (2019) six-step framework: familiarization, coding, theme generation, review, definition, and reporting.	Identification of key themes on collaboration barriers, innovation gaps, and potential enablers.
Phase 2: Delphi Process	To validate, refine, and prioritize strategies for improving collaboration and	Same 40 participants re-engaged in iterative consensus rounds.	Three-round Delphi method	Consensus analysis and synthesis of iterative feedback to refine policy recommendations.	Finalized collaborative policy framework for CPR training innovation and implementation within

policy development in CPR training innovation.		CHPS and related health systems.

V.   FINDINGS

The Delphi research was executed in three iterative rounds to achieve expert agreement on policy goals, financing methods, enforcement measures, accreditation criteria, and stakeholder responsibilities in enhancing industry-academia partnership for CPR training in Ghana. Each cycle enhanced the conclusions from the prior phase, systematically reducing the focus to provide practical, evidence-based suggestions.

In Round 1, an online survey collected responses from 40 participants including academics, healthcare professionals, lawmakers, and the general populace. The results identified numerous significant obstacles hindering the execution of CPR instruction, such as insufficient public awareness (45%), inadequate training opportunities (47.5%), lack of finance (42.5%), and cultural hurdles to innovation (42.5%). Despite these challenges, 55% of participants concurred that academic research is well-aligned with industrial requirements; yet, 35% assessed trust between academia and industry as neutral, while 30% evaluated it as low, highlighting the need for enhanced cooperation.

The government's participation was mostly seen as insufficient, with 52.5% of respondents expressing disagreement or significant disagreement with its effective support for CPR training activities.

The research identified four principal policy priorities: (1) augmenting financial support for CPR training and innovation, (2) improving collaboration among academics, industry, and government, (3) broadening training accessibility in remote regions, and (4) creating cost-effective and creative training resources.   Likewise, prospective solutions like government financing for collaborative projects (67.5%), public-private partnerships (72.5%), tax incentives for industrial research and development (67.5%), and regulatory assistance for innovative training tools (67.5%) attracted substantial support but needed more elaboration. Participants evaluated stakeholder roles, with academics, business, government, and NGOs each attaining over 60% consensus over their respective tasks. Nonetheless, there was lack of consensus over the scope of their anticipated contributions, underscoring the need for more precise classifications.

Table 2. *Summary of Delphi Round 1 Findings (n = 40)*

Category	Key Findings / Variables	% Agreement or Rating
Barriers to Effective CPR Instruction	• Insufficient public awareness	45%
	• Inadequate training opportunities	47.5%
	• Lack of financial support	42.5%
	• Cultural barriers to innovation	42.5%
Alignment of Academic Research and Industrial Needs	Academic research aligns with industry requirements	55% agreement
Trust Between Academia and Industry	Neutral trust levels	35%
	Low trust levels	30%
Governmental Support for CPR Initiatives	Government effectively supports CPR training and innovation	52.5% disagreement / strong disagreement
Policy Priorities Identified	1. Financial support for CPR innovation	All rated highly significant (no clear priority consensus)
	2. Enhanced academia–industry–government collaboration	
	3. Wider training access in remote areas	
	4. Development of cost-effective training tools	
Proposed Policy Solutions	• Government funding for collaborative projects (67.5%)	Consensus approaching threshold (≥70% in some cases)
	• Public–private partnerships (72.5%)	
	• Tax incentives for R&D (67.5%)	
	• Regulatory support for innovative training tools (67.5%)	
Stakeholder Roles and Responsibilities	Academia, Industry, Government, NGOs identified as key actors	≥60% consensus on actor importance

Building upon the results of Round 1, Round 2 focused on enhancing policy goals, financing methods, and regulatory frameworks. Participants were requested to prioritise policies according to their practicality and anticipated effect. Augmenting funds for CPR training (62.5%) was seen as the foremost priority, followed by improving stakeholder coordination (55%), whilst broadening rural training access (42.5%) and creating inexpensive teaching materials (40%) were regarded as secondary issues. The public-private partnership (PPP) model gained a 72.5% agreement, establishing it as the preferred financing method. Government financing for CPR training (62.5%) and tax incentives for sector contributions (62.5%) received substantial support, however corporate social responsibility (CSR) funding was seen less feasible (47.5%). Consensus was achieved on two regulation measures (≥70%): requiring CPR training for healthcare personnel and first responders (80%) and establishing a nationwide CPR training accreditation system (72.5%). The establishment of a national regulatory

framework (60%) and the need for industry-academia cooperation in research (67.5%) received substantial support but fell short of the consensus criterion. The responsibilities of stakeholders were further assessed, with government leadership in policy design, budget distribution, and enforcement reaching a consensus of 72.5%, therefore affirming its essential role in the spread of CPR training. Academia (60%), business (60%), and NGOs (57.5%) got substantial support but required further explication.

Table 3. *Summary of Delphi Round 2 Findings (n = 40)*

Category	Key Variables / Statements	% Agreement	Consensus Status
Policy Prioritization	Augment funding for CPR training	62.5%	*Near consensus*
	Improve stakeholder coordination (academia–industry–government)	55%	*Substantial support*
	Broaden rural training access	42.5%	*Low consensus*
	Develop inexpensive and innovative teaching materials	40%	*Low consensus*
Financing Mechanisms	Public–Private Partnership (PPP) model	72.5%	*Consensus achieved*
	Government financing for CPR training	62.5%	*Near consensus*
	Tax incentives for industrial R&D contributions	62.5%	*Near consensus*
	Corporate Social Responsibility (CSR) funding	47.5%	*Low consensus*
Regulatory Frameworks	Mandatory CPR training for healthcare workers and first responders	80%	*Consensus achieved*
	National CPR training accreditation system	72.5%	*Consensus achieved*
	Establish national regulatory framework for CPR training	60%	*Near consensus*
	Promote academia–industry research collaboration in CPR innovation	67.5%	*Substantial support*
Stakeholder Roles	Government leadership (policy design, budgeting, enforcement)	72.5%	*Consensus achieved*
	Academia's role in research and curriculum development	60%	*Substantial support*
	Industry's role in funding and innovation	60%	*Substantial support*
	NGOs' role in community training and advocacy	57.5%	*Moderate support*

Round 3 sought to finalise implementation plans and clarify stakeholder roles. The foremost policy aim was improving collaboration among academics, industry, and government (30%), succeeded by augmenting financing (25%), whilst both extending rural training and creating inexpensive tools received 22.5% support each. Participants affirmed public-private partnerships (PPPs) as the principal financing source, achieving a consensus of 75%, surpassing the ≥70% requirement. Nonetheless, 25% favoured a government-funded approach, contending that public investment should supersede dependence on the private sector. To improve PPP sustainability, participants suggested the establishment of performance indicators, the execution of financing reviews, and the implementation of transparent financial reporting systems.

There was a robust agreement (80%) on the need of including CPR training within medical and nursing curriculum, underscoring the significance of establishing CPR teaching at the fundamental level. Although accreditation certification requirements (67.5%) and workplace training programs (65%) received substantial approval, they did not achieve consensus, indicating that they should function as secondary compliance measures.

The establishment of a national CPR training accreditation system achieved agreement (75%) on the standardisation of CPR training curriculum, affirming its significance in maintaining uniformity across training facilities. The certification and recertification criteria (60%) got substantial support but fell short of the threshold, while government control and public awareness initiatives (15%) garnered little backing, suggesting that participants favoured organised training over direct regulation. All stakeholder roles achieved robust consensus (≥70%), affirming their agreement on contributions to CPR instruction. The specified roles encompass academia (90%) concentrating on curriculum development, research, and training execution; industry (80%) facilitating funding and the creation of innovative training instruments; government (87.5%) directing policy formulation, funding distribution, and enforcement; and NGOs and healthcare providers (85%) broadening training outreach and community-based initiatives. Subsequent improvements indicated that academics need to assess the influence of CPR training on public health outcomes, the industry should engage in the development of training materials rather than just financing them, and NGOs should improve grassroots outreach initiatives.

The consensus findings will be used to build a comprehensive policy framework. The framework is predicated on: (i) Enhancing coordination among academia, industry, and government to ensure resource alignment, (ii) Establishing a sustainable funding model that utilises public-private partnerships under government oversight, (iii) Instituting CPR training as an essential element of medical and nursing education, (iv) Creating a standardised national CPR training curriculum to ensure uniformity and consistency, (v) Carefully delineating stakeholder roles to facilitate effective collaboration and accountability.

Table 4. *Summary of Delphi Round 3 Findings (n = 40)*

Category	Key Variables / Statements	% Agreement	Consensus Status
Final Policy Prioritization	Enhance collaboration among academia, industry, and government	30%	*Ranked 1st priority*
	Augment financing for CPR training and innovation	25%	*Ranked 2nd priority*
	Expand rural training access	22.5%	*Ranked 3rd priority*
	Develop low-cost and innovative training tools	22.5%	*Ranked 3rd priority (tie)*
Financing Mechanisms	Public–Private Partnership (PPP) model as principal financing option	75%	*Consensus achieved*
	Government-funded model	25%	*Minority view*
	Sustainability measures: performance indicators, periodic reviews, and transparent reporting	Qualitative consensus	*Supported recommendations*
Educational and Regulatory Measures	Integration of CPR training into medical and nursing curricula	80%	*Consensus achieved*
	National CPR training accreditation system (standardized curriculum)	75%	*Consensus achieved*
	Accreditation and certification requirements	67.5%	*Substantial support*
	Workplace-based CPR training programmes	65%	*Substantial support*
	Certification and recertification criteria	60%	*Moderate support*
	Government control and public awareness initiatives	15%	*Low consensus*
Stakeholder Roles and Responsibilities	Academia – curriculum development, training execution, research evaluation	90%	*Consensus achieved*
	Government – policy formulation, budget allocation, and enforcement	87.5%	*Consensus achieved*
	NGOs & Healthcare providers – community training and outreach	85%	*Consensus achieved*
	Industry – funding support and innovation in training materials	80%	*Consensus achieved*

VI. DISCUSSION OF FINDINGS

The three-round Delphi approach yielded a unified consensus on enhancing Ghana's CPR training framework via organized collaboration, sustained funding, and curriculum incorporation. The first round produced a diverse array of proposals that highlighted disjointed institutional goals, such as the necessity for policy standardization, improved training infrastructure, and strengthened coordination among academia, healthcare institutions, and government organizations. Consensus levels were moderate, indicating various degrees of institutional preparedness and divergent views on the feasibility of implementation. These data corroborate the findings of Vural et al. (2017), who noted considerable discrepancies in nurses' awareness of CPR guidelines despite substantial involvement in training programs. Alsabri et al. (2024) similarly identified inconsistent compliance with resuscitation techniques among healthcare workers in Middle Eastern Arab nations, attributing this discrepancy to non-standardized courses and inadequate institutional control. These comparisons show that Ghana's issues mirror wider worldwide trends in which CPR teaching is hindered by variable institutional ownership.

By Round 2, the prioritization of interventions was elucidated. Participants progressively concurred on the imperative of instituting standardized CPR protocols, national accreditation systems, and integrated financial sources. The iterative feedback facilitated the refinement of prior proposals, and consensus thresholds (≥70%) were attained on multiple operational topics. The acceptance of public–private partnerships (PPPs) as a feasible financing model acknowledged fiscal limitations in the public sector and the significant contribution of private entities in training provision and certification.

This conclusion corroborates Mpotos et al. (2015), who contend that standardized certification augments skill retention and promotes survival outcomes. Participants' support for public–private partnerships (PPPs) as the primary financing option (75% consensus) aligns with literature promoting blended finance mechanisms for emergency care systems in low- and middle-income countries (LMICs) (e.g., Alsabri et al., 2015; Nakanjako et al., 2015). These studies indicate that collaborations among health ministries, institutions, and non-governmental organizations are crucial for maintaining CPR education in resource-limited environments.

Round 3 solidified these positions and offered comprehensive operational clarity. Stakeholders highlighted collaboration among academics, industry, and government (30%) as the principal policy objective, followed by enhancing financing (25%) and broadening rural training coverage (22.5%). The 75% consensus on PPPs as the favored finance instrument signifies increasing institutional confidence in collaborative accountability frameworks. Furthermore, an 80% agreement on incorporating CPR into medical and nursing curricula highlights a systemic transition towards sustainability via early professional education. Nevertheless, diminished consensus regarding workplace training programs (65%) and accrediting certification standards (67.5%) indicates ongoing discourse over regulatory enforcement and institutional capability. The substantial consensus (80%) regarding the incorporation of CPR within medical and nursing curriculum aligns with the recommendations of Anderson

et al. (2017) and Bray, Greif & Morley (2022), who underscore the importance of early and ongoing resuscitation education as a factor influencing skill proficiency. The limited agreement on workplace training (65%) and certification enforcement (67.5%) highlights ongoing uncertainty regarding compliance accountability, a challenge also identified by Abella et al. (2007), who observed that certification alone does not ensure skill retention or adherence to practice standards.

These results collectively illustrate a steady shift towards a multi-sectoral, curriculum-integrated, and performance-monitored CPR system. They confirm that structured governance, continuous funding, and regular assessment are essential for integrating CPR proficiency into hospital systems. However, Dong et al. (2024) indicate that success will hinge on the implementation of monitoring metrics and fair access to training across urban-rural disparities.

VII. CONCLUSIONS AND RECOMMENDATIONS

This research offers a comprehensive, evidence-driven framework to enhance cooperation between business and academics in CPR teaching in Ghana. A consensus was achieved on essential elements, such as policy goals, financing methods, enforcement procedures, and certification criteria, using a structured Delphi process. The results highlight the need for a coordinated strategy that utilises public-private partnerships, standardised curriculum, and stakeholder-driven implementation methods to guarantee the efficacy and sustainability of CPR training programs. Incorporating these suggestions into national health policy would enable Ghana to augment emergency response capacities, elevate survival rates in critical circumstances, and create a CPR teaching paradigm that is both scalable and sustainable. Subsequent study need to concentrate on executing and appraising these suggestions to evaluate their effects and enhance methodologies for expanding CPR instruction efforts nationwide. This work enhances worldwide efforts to optimise emergency response systems and save lives through CPR teaching.

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