

Original Research Article

A Delphi Consensus on the Contents of a Basic Life Support Training Module for Healthcare Practitioners in Ghana

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Abstract: Background: Basic Life Support (BLS) knowledge and skills are essential for healthcare practitioners, particularly nurses and midwives who are often the first responders in clinical emergencies. However, BLS training in Ghana remains inconsistent across institutions. This study sought to develop a consensus on the appropriate contents of a BLS training module for healthcare practitioners in Ghana using the Delphi technique. Methods: A two-round Delphi consensus study was conducted among experts in anaesthesia, critical care, nursing, and BLS instruction from major healthcare institutions in Ghana. The questionnaire was developed from the 2015 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Responses were analysed using Cochran's Q test, while reliability was assessed using Cronbach's alpha. Results: Fifteen experts participated in round one, while ten completed round two. From the original 56 items, 31 consensus statements were retained for inclusion in the final BLS training module. Key themes identified included the role of trainers, learner responsibilities, institutional support, course design, assessment strategies, simulation-based learning, and continuous professional development. Statistical significance was observed across both Delphi rounds ($p < .001$). Conclusion: The study established consensus-driven recommendations for the development of a standardised BLS training curriculum for healthcare practitioners in Ghana. The findings support the need for uniform training guidelines, simulation-based practice, regular retraining, and institutional investment in skills laboratories to improve CPR competence and patient outcomes.

Keywords: Basic Life Support, Delphi technique, CPR training, nursing education, Ghana, healthcare practitioners

Introduction

Basic Life Support (BLS) is a fundamental component of emergency care and remains essential for improving survival after cardiac arrest and other life-threatening emergencies. Nurses, midwives, and other healthcare practitioners are frequently required to initiate Cardiopulmonary Resuscitation (CPR) in both hospital and community settings. Despite its importance, BLS training in Ghana lacks uniformity across training institutions and healthcare facilities.

The Delphi technique provides a structured method for obtaining expert consensus through iterative rounds of questionnaires and controlled feedback. The approach is widely used in healthcare and educational research to establish best practices and guide curriculum development. This study therefore aimed to achieve expert consensus on the essential contents of a BLS training module suitable for healthcare practitioners in Ghana.

Methods

A Delphi consensus design was employed in this study. The questionnaire was developed based on the 2015 American Heart Association (AHA) Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, with contextual modifications relevant to Ghanaian healthcare training needs.

Two iterative rounds were conducted. In round one, 15 experts from anaesthesia, nursing, and critical care participated. Responses were analysed and items meeting the inclusion threshold were retained for round two. In the second round, 10 experts reassessed the refined items. Reliability of the questionnaires was assessed using Cronbach's alpha, while Cochran's Q test was used to determine statistical significance among item selections.

Ethical principles of voluntary participation, anonymity, confidentiality, and informed consent were upheld throughout the study.

Results

Delphi Panel Consensus

The Delphi process was conducted to establish expert consensus on the essential components of a Basic Life Support (BLS) training module for healthcare practitioners. Following two rounds of expert review and rating, consensus was achieved on 31 items, which were subsequently retained for inclusion in the final training module. The retained items reflected key educational and organisational requirements considered necessary for effective BLS training and competency development among healthcare practitioners.

The consensus items emphasised the importance of repetitive hands-on practice, simulation-based learning, standardised instructional approaches, structured assessment and feedback mechanisms, competency-based training, and the establishment of dedicated skills laboratories within healthcare institutions. These elements were consistently rated as

important by the expert panel and were considered fundamental to ensuring the acquisition, retention, and application of BLS knowledge and skills.

Reliability and Internal Consistency

The reliability of the Delphi instrument was assessed using Cronbach's alpha coefficient. Results demonstrated a high level of internal consistency across both Delphi rounds. In Round 1, the instrument achieved a Cronbach's alpha coefficient of 0.87, indicating good reliability. Reliability further improved in Round 2, with a Cronbach's alpha coefficient of 0.906, suggesting excellent internal consistency among the items evaluated by the expert panel. These findings indicate that the questionnaire items measured a coherent construct and that expert responses were stable across rounds.

Level of Expert Agreement

Agreement among panel members was examined using Cochran's Q test. The analysis revealed statistically significant agreement among experts in both Delphi rounds ($p < .001$), demonstrating a strong level of consensus regarding the relevance and appropriateness of the proposed training components. The significant results support the robustness of the consensus-building process and indicate that the retained items reflected shared expert judgement rather than random variation in responses.

Emergent Themes

Qualitative analysis of expert feedback and consensus ratings resulted in the identification of five major thematic domains that informed the final structure of the BLS training module. These themes represented the principal areas considered essential for effective implementation of BLS education within healthcare settings.

Theme 1: Roles of Trainers

Experts emphasised the critical role of trainers in facilitating effective learning experiences. Consensus items within this theme highlighted the need for instructors to possess current BLS certification, demonstrate competence in resuscitation skills, employ evidence-based teaching strategies, provide constructive feedback, and facilitate simulation-based learning activities. Trainers were also expected to model best practices and ensure consistency in instructional delivery.

Theme 2: Course Content and Delivery

The second theme focused on the content and pedagogical approaches required for effective BLS training. Experts agreed that training programmes should incorporate current resuscitation guidelines, structured theoretical instruction, simulation-based practice, repetitive skill rehearsal, and competency-based assessments. Participants also endorsed the integration of scenario-based learning and periodic refresher training to enhance knowledge retention and skill proficiency.

Theme 3: Roles of Learners

Consensus items within this theme highlighted learner responsibilities in achieving competency. Experts agreed that healthcare practitioners should actively participate in training activities, engage in deliberate practice, seek feedback, demonstrate competence during assessments, and maintain ongoing professional development in resuscitation skills. Learner commitment was viewed as essential for sustaining BLS competence over time.

Theme 4: Institutional Responsibilities

The fourth theme addressed the responsibilities of healthcare institutions in supporting BLS education. Experts agreed that institutions should allocate resources for training, establish policies that support continuing education, provide access to training equipment, and create opportunities for regular skills updates. The establishment of dedicated skills laboratories and simulation facilities was identified as a particularly important institutional responsibility.

Theme 5: Responsibilities of Practice Areas

The fifth theme focused on the role of clinical practice environments in reinforcing BLS competencies. Experts highlighted the need for practice settings to support the application of learned skills, facilitate access to emergency equipment, encourage adherence to resuscitation protocols, and promote a culture of continuous learning and quality improvement. Clinical areas were viewed as essential environments for translating training into effective patient care.

Summary of Findings

Overall, the Delphi study achieved consensus on 31 items across five thematic domains, providing a comprehensive framework for the development of a BLS training module for healthcare practitioners. The high reliability coefficients and statistically significant levels of expert agreement support the validity and credibility of the findings. The resulting framework underscores the importance of trainer competence, learner engagement, evidence-based course delivery, institutional support, and conducive practice environments in strengthening BLS education and improving resuscitation preparedness among healthcare practitioners.

Discussion

This Delphi consensus study sought to identify the most appropriate content for a Basic Life Support (BLS) training module for healthcare practitioners in Ghana. Through a structured process involving experts in anaesthesia, critical care, nursing, and healthcare education, consensus was achieved on 31 key statements that should guide the development and implementation of BLS training programmes. The findings provide important insights into how BLS education can be strengthened to improve competency, standardisation, and patient outcomes within the Ghanaian healthcare system.

One of the most significant findings from this study is the strong support for practical, hands-on learning as a central component of BLS training. The panel consistently

prioritised repetitive practice, simulation exercises, demonstrations using manikins, and opportunities for learners to develop psychomotor skills through active participation. This finding aligns with contemporary evidence in resuscitation education, which emphasises that CPR competence is best achieved through deliberate practice rather than passive learning. Research has shown that healthcare professionals often experience a decline in CPR knowledge and skills within a few months after training, particularly when opportunities for regular practice are limited (Bhanji et al., 2015). Consequently, training programmes that incorporate repeated practice sessions and simulation-based learning are more likely to improve skill retention and performance during real-life cardiac arrest situations.

The consensus reached regarding simulation-based training is particularly important within the Ghanaian context. Simulation provides learners with opportunities to practise decision-making, teamwork, communication, and technical skills in a safe environment where mistakes can become valuable learning opportunities. Participants strongly endorsed the use of realistic clinical scenarios that mirror actual hospital settings. This recommendation reflects the growing recognition that healthcare education should bridge the gap between theoretical knowledge and clinical practice. By exposing learners to realistic emergencies during training, educators can enhance learners' confidence and preparedness when confronted with actual resuscitation events.

Another notable finding was the emphasis placed on the role of trainers in ensuring effective learning outcomes. The experts agreed that trainers should regularly update their knowledge and skills, present content consistently, create relevant learning scenarios, and provide constructive feedback to learners. These findings highlight the critical influence of instructors on the quality of resuscitation education. Educational theory suggests that effective teaching extends beyond content delivery to include mentorship, facilitation, assessment, and learner support. In rapidly evolving fields such as resuscitation science, instructors must remain current with emerging evidence and guideline updates to ensure that learners receive accurate and evidence-based information. Continuous professional development for BLS instructors should therefore be considered an essential component of any national training strategy.

The importance of feedback and debriefing emerged as another key theme from the Delphi process. Participants recognised that learning does not end once a practical exercise has been completed. Rather, structured reflection and feedback provide learners with opportunities to identify strengths, recognise areas for improvement, and consolidate newly acquired knowledge and skills. Debriefing has been widely acknowledged as one of the most effective components of simulation-based education because it promotes critical thinking and reflective practice. The strong support for feedback and debriefing in this study suggests that future BLS programmes should incorporate structured opportunities for reflection following skills practice and simulations.

The findings also underscore the need for competency-based education. Participants agreed that learning objectives should be clear, measurable, and linked directly to

assessment strategies. Furthermore, the purpose of training should be to achieve mastery of essential competencies rather than merely completing a prescribed number of training hours. This perspective reflects a broader shift within healthcare education toward competency-based approaches that prioritise demonstrated performance over time-based training models. Competency-based education ensures that learners acquire the knowledge, skills, and professional behaviours necessary for safe and effective practice. In the context of BLS training, such an approach may improve CPR performance and, ultimately, patient outcomes.

An important outcome of this study is the recognition that responsibility for effective BLS education extends beyond individual learners and trainers. The panel highlighted the significant role of educational institutions, healthcare facilities, and regulatory bodies in supporting training and maintaining competency. Participants recommended that both training institutions and hospitals establish functional skills laboratories to facilitate regular practice and retraining. This recommendation reflects an understanding that skill acquisition and maintenance require ongoing access to appropriate facilities and equipment. Unfortunately, many healthcare institutions in low- and middle-income countries face resource constraints that limit opportunities for simulation-based learning. Addressing these infrastructural challenges will therefore be essential for the successful implementation of standardised BLS programmes.

The recommendation that Ghana should adopt uniform national guidelines for BLS training is particularly noteworthy. Although BLS concepts are included within nursing and midwifery curricula, differences in content delivery, instructional approaches, and assessment methods may result in variations in learner competence. The development of a nationally standardised curriculum informed by expert consensus could help reduce these inconsistencies and ensure that healthcare practitioners receive comparable training regardless of their institution. Standardisation would also facilitate quality assurance, benchmarking, and evaluation of training outcomes across educational and healthcare settings.

The Delphi panel further recommended that licensing and regulatory bodies should require periodic CPR retraining and certification as part of professional licence renewal processes. This recommendation reflects growing international recognition that resuscitation competence is not permanent and must be maintained through regular updates and refresher training. Studies have repeatedly demonstrated that both knowledge and psychomotor skills decline over time following initial certification. Mandatory retraining requirements could therefore play an important role in maintaining competence among healthcare practitioners and ensuring readiness to respond effectively during emergencies. Such policies may also contribute to a culture of lifelong learning and continuous professional development within the healthcare workforce.

The findings of this study have broader implications for healthcare education and policy development in Ghana. The consensus statements generated through this process provide an evidence-informed framework that policymakers, educational institutions,

professional associations, and healthcare organisations can use to strengthen BLS training. By focusing on standardisation, competency-based learning, simulation, feedback, and continuous professional development, these recommendations support a comprehensive approach to resuscitation education that extends beyond initial training and promotes sustained competence over time.

This study also demonstrates the value of the Delphi technique as a tool for curriculum development and consensus building in healthcare education. By allowing experts to contribute independently and anonymously across multiple rounds, the Delphi process minimises the influence of dominant individuals and encourages balanced participation. The high levels of agreement achieved among participants suggest that the final recommendations represent a credible and broadly supported framework for BLS training within the Ghanaian context.

Despite the strengths of this study, several limitations should be acknowledged. First, the number of participants was relatively small, although this is consistent with Delphi methodology, which prioritises expertise rather than sample size. Second, most panel members were affiliated with tertiary healthcare institutions and may not fully represent the perspectives of practitioners working in rural or primary healthcare settings. Third, while consensus indicates expert agreement, it does not necessarily guarantee effectiveness in practice. Further research is therefore required to evaluate the implementation and impact of the proposed training module.

Future studies should focus on piloting the consensus-derived BLS module among healthcare practitioners and students across different regions of Ghana. Such studies could evaluate changes in knowledge, skills, confidence, and clinical performance following implementation. Additional research should also explore barriers and facilitators to the adoption of standardised BLS training programmes, particularly in resource-constrained environments. Understanding these contextual factors will be critical for ensuring successful implementation and sustainability.

Overall, the findings of this study provide a strong foundation for the development of a standardised, evidence-informed, and contextually relevant BLS training curriculum for healthcare practitioners in Ghana. The recommendations generated through expert consensus have the potential to strengthen resuscitation education, improve CPR competency, and ultimately contribute to better patient outcomes across the healthcare system.

Overall, the consensus statements generated through this Delphi process provide a strong foundation for the development of a standardised, contextually relevant, and competency-driven BLS training programme for healthcare practitioners in Ghana. Implementation of these recommendations may improve CPR knowledge and skills, strengthen emergency preparedness, and ultimately contribute to improved patient survival outcomes.

Future studies should focus on validating and piloting the proposed BLS training module across nursing and midwifery institutions in Ghana. Research evaluating learner outcomes, knowledge retention, and clinical performance following implementation of the standardised curriculum would provide valuable evidence for national adoption. Further exploration of barriers to implementation, including funding constraints, equipment availability, and instructor capacity, is also warranted.

Despite its strengths, the study had some limitations. The sample size was relatively small, although this is consistent with Delphi methodology, which prioritises expertise rather than large participant numbers. Additionally, most participants were drawn from tertiary healthcare institutions, which may limit the generalisability of the findings to smaller healthcare facilities and rural practice settings. Nevertheless, the diversity of professional backgrounds among the panel members strengthened the credibility of the findings.

This study also contributes to the growing body of literature on the application of Delphi methodology in healthcare curriculum development. The Delphi process enabled the integration of diverse expert opinions while minimising the influence of dominant individuals, thereby supporting balanced and credible consensus development. The high Cronbach's alpha values recorded in both rounds further demonstrate the reliability and internal consistency of the consensus process.

The findings of this study have important implications for nursing and midwifery education in Ghana. Although BLS concepts are included within existing curricula, variations in content delivery, assessment methods, and practical exposure may contribute to inconsistent learner outcomes. The consensus statements generated in this study provide an evidence-informed framework that educational institutions can use to harmonise teaching approaches and strengthen competency-based learning.

The panel further recommended mandatory CPR retraining and certification before annual licence renewal. This recommendation reflects concerns about declining competence among healthcare practitioners over time and supports the principle of continuing professional development. Mandatory retraining policies have been adopted in several countries to maintain competency among healthcare workers and improve patient safety outcomes. Introducing similar requirements in Ghana could strengthen professional accountability and ensure that healthcare practitioners maintain updated resuscitation competencies throughout their careers.

Institutional responsibilities were also strongly emphasised in the consensus statements. The recommendation that training institutions and hospitals should establish functional skills laboratories reflects the need for sustained opportunities for practice and retraining. Skills laboratories provide structured environments where learners can repeatedly practise CPR techniques and receive supervision. However, access to simulation equipment and skills laboratories remains limited in many healthcare institutions in Ghana. Investment in such infrastructure is therefore necessary to support effective implementation of standardised BLS education.

Structured feedback and debriefing emerged as another key theme in the study. Debriefing after simulation and skills practice allows learners to reflect on their actions, identify strengths and weaknesses, and improve future performance. Educational research has demonstrated that reflective feedback significantly improves both technical and non-technical skills such as communication, teamwork, and leadership during emergencies. The emphasis on feedback within this study therefore supports educational approaches that promote deeper learning and long-term retention.

The study further identified the critical role of trainers in ensuring effective BLS education. Trainers were expected to update their knowledge regularly, facilitate practical learning experiences, provide structured feedback, and ensure competency-based assessment. These findings support the concept that instructor quality strongly influences learner performance and skill acquisition. Continuous professional development for instructors is therefore essential if BLS programmes are to remain evidence-based and effective. This recommendation is particularly important given the rapid evolution of international CPR guidelines and resuscitation science.

The Delphi panel also highlighted the importance of consistency in course delivery and instructional methods. Variability in CPR instruction has been identified as a major challenge in healthcare education, particularly in low- and middle-income countries where training resources and instructor competencies differ substantially across institutions. The recommendation for uniform national training guidelines therefore represents a significant contribution toward improving standardisation in BLS education in Ghana. Standardised curricula may help ensure that all healthcare practitioners acquire comparable competencies regardless of their institution of training or practice location.

Another important finding from this study is the recognition of simulation and manikin-based practice as essential components of BLS education. Simulation-based learning has become increasingly important in healthcare training because it creates safe environments where learners can practise emergency interventions without risking patient safety. The recommendation that training should include demonstrations on manikins and realistic clinical scenarios aligns with contemporary educational strategies that encourage experiential learning and contextual application of knowledge. In the Ghanaian context, this finding is particularly relevant because many healthcare practitioners may have limited exposure to structured simulation training during their formal education.

The emphasis on repetitive practice and hands-on learning reflects current evidence in resuscitation education, which suggests that psychomotor CPR skills deteriorate rapidly when not reinforced regularly. Studies have consistently shown that healthcare practitioners may lose competence within months after initial training if refresher sessions are not provided. The recommendation that learners should practise repetitively to improve key skills therefore supports the growing international emphasis on low-dose, high-frequency training approaches. Such approaches promote skill retention, confidence, and rapid response during emergencies.

This study successfully established expert consensus on the essential components of a Basic Life Support (BLS) training module for healthcare practitioners in Ghana. The findings demonstrate the importance of developing a standardised and competency-based training framework that reflects both international recommendations and local healthcare realities. Through the Delphi consensus process, the study identified critical areas that should guide BLS education, including simulation-based learning, repetitive psychomotor practice, structured assessment, feedback and debriefing, and institutional support systems.

Conclusion

The study achieved expert consensus on the contents of a BLS training module for healthcare practitioners in Ghana. The findings underscore the importance of standardised curricula, simulation-based learning, regular retraining, and competency-focused assessment strategies. Adoption of these recommendations may improve CPR competence among healthcare practitioners and contribute to better patient outcomes in emergencies.

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