Assessment of Knowledge and Skills in Basic Life Support among Students at the Kenya Medical Training Collage: A Systematic Review

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ABSTRACT

Basic life support is a significant emergency intervention which includes early recognition of cardiac arrest, cardiopulmonary resuscitation and use of an automated external defibrillator. Healthcare students need to have sufficient knowledge and practical skills of basic life support to respond to life threatening emergencies. Evaluation of the available evidence may help in identifying gaps in basic life support training among students attending Kenya Medical Training Collage. To assess the level of knowledge and skills in basic life support among students at the Kenya Medical Training Collage through a systematic review. A systematic review will be performed by searching relevant electronic databases to identify studies on basic life support knowledge and practical skills among healthcare students. Studies will be selected according to pre-determined inclusion and exclusion criteria. Data will be extracted using a structured tool and thematically analysed to detect trends in knowledge, practical performance, associated factors and training approaches. The study selection process will be described with a PRISMA flow diagram. The results will be determined after search, screening, data extraction and analysis. The review will synthesize reported levels of knowledge and practical skills in basic life support, factors associated with performance and evidence on training approaches. It will also highlight the gaps in research specific to KMTC students.

KEYWORDS

Basic Life Support, systematic review, healthcare students, knowledge, skills, Kenya Medical Training Collage

I. INTRODUCTION

Basic Life Support is an essential emergency intervention consisting of early recognition of cardiac arrest, cardiopulmonary resuscitation and use of an automated external defibrillator. Early initiation of cardiopulmonary resuscitation and other recommended resuscitation measures are important in improving the management of cardiac arrest.

Healthcare students therefore need adequate theoretical knowledge and practical skills to respond appropriately to life threatening. They form an integral part of healthcare training because students may encounter patients requiring immediate resuscitation in their clinical practice. Research among healthcare students in Uganda has shown the need to include Basic Life Support in healthcare training curriculum.

Likewise, multicentre study on medical undergraduate in Syria, Iraq and Jordan demonstrated gaps in Basic Life Support awareness and knowledge. Various teaching methods have been used to improve healthcare students Basic Life Support knowledge and practical performance.

Stimulation based learning provides students with opportunity to practice emergency procedure in a safe environment and receive feedback on their performance. Although basic life support has many advantages, students might find it difficult to maintain knowledge and practical skills over time hence the need of frequent training and repeated practice. Spaced learning has also been found to be a strategy to improve knowledge retention among students.

Basic life support education has also been promoted beyond health care institutions to strengthen community preparedness for cardiac arrest(Schroeder et al., 2023).International resuscitation recommendations emphasizes on the importance of evidence-based training and effective resuscitation practices.

However, evidence from other countries cannot automatically establish the level of knowledge and practical skills in basic life support among students at the Kenya Medical Training Collage hence this systematic review will help assess the available evidence on Basic Life Support knowledge and skills among the Kenya Medical Training Collage students, identify factors related with performance and establish gaps to inform future training.

II. MATERIALS AND METHODOLOGY

This chapter describes the methods that will be used to conduct the systematic review on the assessment of basic life support knowledge and skills among student at the Kenya Medical Training Collage. It outlines the study design, the research questions, and research strategy and selection criteria. The preferred reporting items for systematic review and Meta-Analyses (PRISMA) guidelines guides the reporting of the study selection process.

A. Study design

The study employs a systematic review design to assess the knowledge and practical skills in basic life support among students at the Kenya Medical Training Collage. The review follows a structured process of identifying, screening, selecting and analysing the study.

B. Research questions

The review will be based on the following main research question:

What is the level of knowledge and skills in basic life support among students at the Kenya Medical Training Collage?

The following are the specific research questions:

- What factors influence practical basic life support skills among students at the Kenya Medical Training Collage?
- What factors influence basic life support knowledge among students at the Kenya Medical Training Collage?

C. Research strategy and selection criteria

A systematic search strategy will be used to identify relevant studies on knowledge and skills in Basic Life Support among students at the Kenya Medical Training collage. Electronic database such as PubMed, Google Scholar and Science Direct will be searched for more relevant literature. This study will focus on studies published between January 2021 and October 2026.

Table 1: Boolean Search Strategy

Search Concept	**Keywords And Search Terms**	**Boolean Operator**
Basic life support	"Basic Life Support", BLS, "Cardiopulmonary resuscitation", CPR	OR
Knowledge and skills	Knowledge, skills, competence, training, competency	OR
Student population	Students, "medical students" Healthcare students	OR
Combined search	("Basic life support "OR BLS OR "Cardiopulmonary resuscitation" OR CPR AND (knowledge OR skills OR competency OR competence OR training) AND (student OR "Medical students" OR Healthcare students")	AND

1. Selection Criteria

This will determine which studies are eligible for inclusion in the systematic review.

Inclusion criteria

Studies will be included if they:

- Were published between January 2021 and October 2026.
- Focus on knowledge, skills, training and retention of basic life support knowledge and skills.
- Include healthcare students.
- Are conducted in Kenya Medical Training Collage or any other healthcare training institution.
- Are published in English.
- Provide full information on Basic Life Support knowledge and practical skills and the factors that affect learning.

2. Exclusion criteria

Studies will be excluded if:

- Were published before January 2021
- Do not have any information concerning basic life support knowledge and skills.
- Are duplicate publications.

- Do not provide sufficient information to assess the relevance to the review.
- Have texts that cannot be obtained for eligibility.

D. Data extraction

Data will be extracted using a structure form developed for studies that meets the inclusion criteria. The extracted information includes; authors, year of publication study design, objectives, the methods of assessing basic life support knowledge and skills, the findings and conclusion. The data will be organized to facilitate a cross-study comparison that focuses on student's basic life support knowledge and skills, factors that influence learning and training methods.

The review selection process follows the three main PRISMA stages: identification, screening and inclusion.

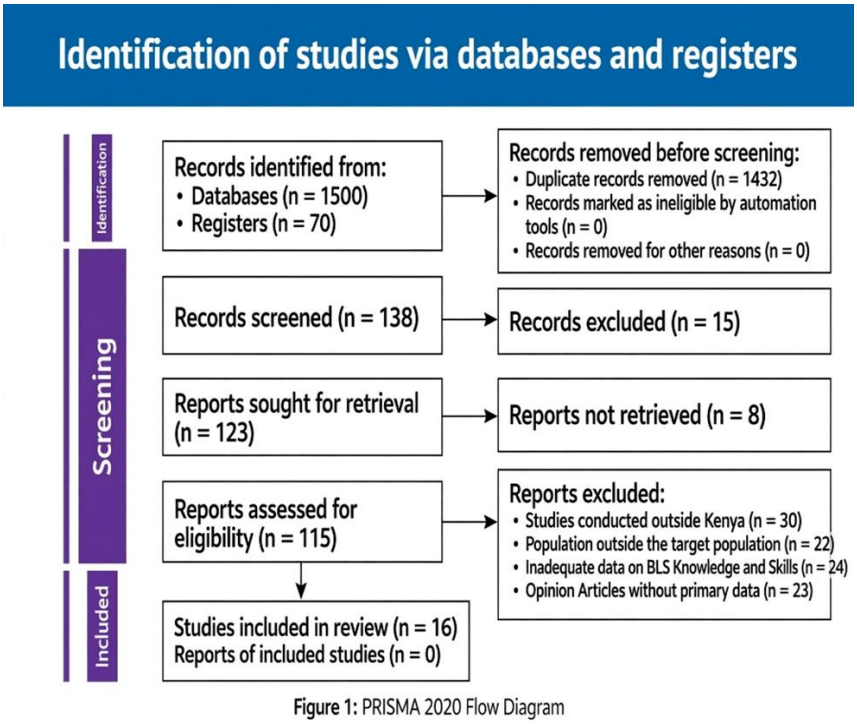


Figure 1: PRISMA flow diagram

III. RESULTS

This presents the finding of the systematic review on the assessment of knowledge and skills in basic life support among healthcare students at the Kenya Medical Training Collage. The results focus on students' knowledge, practical skills and retention of knowledge and skills.

A. Basic life support knowledge

Students in medical students' populations have shown that although students acknowledge the importance of basic life support, they may still be lacking the basic life support knowledge. Evidence from medical students in Iraq, Syria and Jordan shows gaps in basic

life support. Also, a cross-sectional study in Uganda showed the need for the inclusion of basic life support in the medical curriculum with majority of the participants agreeing with it. Also in Kenya, evidence has shown that diploma nursing students have below average understanding of basic life support. The study reported a low percentage during the assessment of basic life support knowledge.

B. Basic life support practical skills

There exists a clear disconnection between theory and practical. Passing a theoretical examination does not show competence in actual resuscitation. The most common practical errors seen include: failure to achieve the recommended compression depth and rate, poor chest recoil, delayed use of an automated external defibrillators and ineffective ventilation. Similar patterns have also been reported among healthcare workers in East Africa where practical performance remains below the expected emergency care standards.

C. Training approaches

The lecture- based teaching has been found to be inadequate in building the skills needed for resuscitation. Interactive simulation-based learning has been found to significantly enhance both theoretical understanding and practical performance compared to lectures alone. The use of standardized training frameworks such as WHO/ICRC Basic Emergency Care Course improves outcomes. One study cited in this review reportedly found high knowledge scores following trainings done regularly.

D. Retention of Basic Life Support knowledge and skills

Maintaining basic life support knowledge and practical skills after the initial training is a very important concern. The review should examine evidence on how performance change from time to time and if repeated practical's or spaced learning will help support the retention of basic life support knowledge and practical skills.

IV. DISCUSSION

The findings of this systematic review highlight the need for assessing the knowledge and skills in basic life support among students at the Kenny Medical Training Collage. Basic life support is an essential component of healthcare training because it gives students the knowledge and skills needed to recognize a cardiac arrest, start cardiopulmonary resuscitation and the proper use of an automated external defibrillators.

Kenya shows that basic life support among nursing students require some improvement. Similarly, basic life support knowledge and skills among medical students in Uganda demonstrates the need for strengthening basic life support education within the medical curriculum. The review also emphasizes that knowledge and skills are related but distinct aspects of basic life support competence. A student may clearly understand the principles of cardiopulmonary resuscitation theoretically bet experiences difficulties during practical performance. It is therefore important to assess individual components of basic life support rather than relying on examination scores.

The methods used when teaching and training basic life support influence both students experience and performance. Spaced E-learning and blended learning shows how classroom teaching can be combined together with digital learning and practical sessions. Although guidelines inform what should be taught, the value of any kind of teaching methods must be judged from the outcomes. Retention of knowledge and skills after training is also a major concern. Students might perform well after the training but they later struggle to recall the steps used during the practical session. Assessed retention among the first year medical students over one year highlight the importance of follow up evaluations.

Finally, international findings should be applied to Kenya Medical Training Collages with caution. Studies such as provide critical perspectives on basic life support training. Priorities should therefore be give in to studies that directly assessed basic life support knowledge and skills among the healthcare students.

V. CONCLUSION

This review shows the importance of assessing both knowledge and skills in basic life support among the healthcare students. In Kenya, evidence indicates a gap in cardiopulmonary resuscitation knowledge and skills and insists on strengthening Basic Life Support education and assessment in healthcare institutions. Also a similar research among medical students in Uganda shows the importance of basic life support knowledge and positive attitude towards resuscitation. International evidence also shows the importance of evaluating different approaches to basic life support education including spaced E-learning and blended learning.

Additionally, research on simulation-based learning and retention following training emphasizes on the importance of hands-on training and continues evaluation in health education. These results indicate that basic life support should not only be theoretical but also practically. For Kenya Medical Training Collage, the knowledge and skills gaps may be corrected through strengthening the practical training, using standardized assessment methods and providing opportunities for frequent training and learning.

RECOMMENDATIONS

- Digital learning resources should be used alongside practical sessions to help students understand basic life support concepts more.
- Kenya Medical Training Collage should strengthen basic life support training through frequent practical sessions and simulation-based learning.
- Students need to undergo regular theoretical and practical assessment more often to help identify gaps in Basic Life Support knowledge and skills.
- Further research should be conducted across all the Kenya Medical Training Collages to assess students' basic life support knowledge and skills and identify gaps that need some improvements.
- Instructors should provide feedback and additional practices to students who have difficulties in performing basic life support procedures correctly.
- Regular training and learning should be provided to improve retention of basic life support knowledge and skills.

A. Ethical approval

This systematic literature review used information obtained from previously publishes studies and publicly available literature and involve direct recruitment or collection identifiable information from human participants. Ethical principles concerning accurate reporting and appropriate citations were observed.

B. Author's contribution

All the authors contributed to developing the research, identifying relevant literature, designing the research strategy, reviewing, preparing the manuscript and developing the recommendations.

C. Source of funding

The study was conducted without any funding.

D. Conflict of interest

There was not conflict of interest

E. Acknowledgement

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