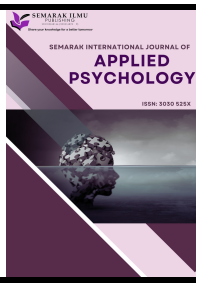
SEMARAK ILMU PUBLISHING

Semarak International Journal of Applied Psychology

Journal homepage:
https://semarakilmu.my/index.php/sijap/index
ISSN: 3030-525X



Baseline Evaluation of Knowledge, Awareness, and Confidence in Basic Life-Saving Skills among Refugee Schoolchildren

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ARTICLE INFO

Article history:
Received 3 October 2025
Received in revised form 8 November 2025
Accepted 10 November 2025
Available online 12 November 2025

Keywords:
First aid; cardiopulmonary resuscitation; schoolchildren; refugee education; baseline assessment; life-saving skills

ABSTRACT

Basic life-saving techniques, including first aid and cardiopulmonary resuscitation (CPR), are essential in improving survival outcomes during out-of-hospital emergencies. However, little is known about the baseline knowledge, awareness, and confidence of refugee children in performing these skills. This study aimed to assess these parameters among school-aged refugee children attending a refugee education centre in Kuantan, Pahang, Malaysia. A structured questionnaire, developed and validated by subject-matter experts, was used to evaluate participants' sociodemographic characteristics, prior training exposure, self-reported confidence, and perceptions of the importance of life-saving skills. Sixty-one students aged 7–15 years participated. Descriptive statistics were used to summarise the data. Of the 61 respondents (male: 31 [50.8%]; female: 30 [49.2%]), most were aged 10–15 years. Only 16.4% had received school-based first-aid training, and 9.8% had attended community-based programmes. For CPR, training exposure was even lower (8.2% school-based; 3.3% community-based). Confidence in performing first aid was low, with only 7% reporting being "confident" and none "very confident." Similarly, only 5% expressed confidence in performing CPR. Despite limited training, almost all respondents perceived learning first aid (95%) and CPR (98%) as "very important." The study reveals a clear gap between perceived importance and actual preparedness in life-saving skills among refugee schoolchildren. These baseline findings underscore the need for structured, age-appropriate first aid and CPR training within refugee education settings. Insights from this study will guide the next phase of an ongoing action-research initiative to strengthen emergency preparedness among refugee youth.

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https://doi.org/10.37934/sijap.8.1.4654

1. Introduction

Prompt and effective intervention during medical emergencies often determines survival outcomes, and the presence of bystanders equipped with basic life-saving skills (BLS), such as first aid and cardiopulmonary resuscitation (CPR), is therefore of paramount importance [1]. Globally, out-of-hospital cardiac arrests and injury-related emergencies remain major causes of preventable mortality among both adults and children [2]. When performed promptly by trained individuals, basic life-saving techniques can significantly improve survival and neurological outcomes in these situations [3].

Recognizing the public health importance of early intervention, many countries have integrated CPR and first aid into school curricula, acknowledging that children can act effectively as first responders when given structured education and practice opportunities [1,4]. School-based BLS programs have been shown to enhance not only knowledge and psychomotor skills but also the willingness to respond in emergencies [5]. In Malaysia, however, while previous studies among local schoolchildren have demonstrated positive attitudes towards CPR, their practical competency and retention of knowledge remain limited [6]. This underscores the ongoing need for early and sustained life-saving education within school environments.

Despite this growing evidence base, such initiatives are rarely extended to marginalized or displaced populations, particularly refugee children, who face compounded barriers to health literacy and education [7]. The Rohingya refugee community in Malaysia represents one of the largest stateless groups in Southeast Asia, yet they remain largely excluded from formal education systems and public health programs [9]. Refugee children often live in densely populated, resource-limited environments where medical emergencies such as injuries, burns, or respiratory distress are common, but access to healthcare and emergency response systems is limited. Equipping them with essential BLS competencies is therefore both a public health necessity and a humanitarian obligation, aligning with global education frameworks such as UNESCO's Sustainable Development Goal 3 (Good Health and Well-being) and Goal 4 (Quality Education).

Recent work has begun to highlight the role of community-based and school-centered life-saving education in promoting inclusivity and resilience among displaced populations. For instance, a study demonstrated that tailored educational modules can effectively build foundational knowledge and self-efficacy in first aid and CPR among schoolchildren, while another study found similar benefits among university students exposed to structured first aid training [10,11]. Nevertheless, there remains a paucity of empirical data on the baseline understanding of life-saving skills among refugee school-aged children in Malaysia or comparable low-resource contexts. Without such evidence, efforts to design effective and sustainable educational interventions risk being misaligned with learners' actual needs and capabilities.

This study forms part of an ongoing action research initiative that seeks to empower refugee schoolchildren with essential life-saving skills through structured training in first aid and CPR. Specifically, this paper reports on the baseline phase, which assessed participants' existing knowledge, awareness, and self-reported confidence in performing basic life-saving procedures. Establishing this baseline is critical for informing the design, implementation, and evaluation of tailored training modules that promote emergency preparedness, community resilience, and sustainable health education among refugee youth in Malaysia.

2. Methodology

2.1 Study Design and Setting

A descriptive cross-sectional survey was conducted at the Rohingya Education Centre in Kuantan, Pahang, Malaysia. This study represented the baseline phase of an ongoing action-research project aimed at empowering refugee schoolchildren with essential life-saving skills such as cardiopulmonary resuscitation (CPR) and first aid.

2.2 Participants

A total of 61 school-aged students voluntarily participated in the study. Inclusion criteria encompassed all children enrolled at the centre aged 7–15 years who were able to comprehend simple survey questions. Students who were absent during data collection or whose parents or guardians did not provide consent were excluded.

2.3 Instrument Development and Validation

A structured questionnaire was developed by the research team based on previous studies assessing CPR and first-aid knowledge among schoolchildren and university students [6,10,11].
The complete instrument comprised four sections addressing sociodemographic characteristics, knowledge, attitudes, practices, and perceptions related to CPR and first aid. For the purpose of this paper, only data from Part A; which assessed sociodemographic characteristics, awareness, and self-reported confidence in basic life-saving skills were analyzed.

The instrument underwent expert review by nursing and emergency care specialists to ensure content validity and clarity. A pilot test involving a small group of students of similar age was conducted to assess comprehension and internal consistency. The questionnaire demonstrated acceptable reliability (Cronbach's $\alpha = 0.82$), and minor adjustments were made prior to full implementation.

2.4 Data Collection Procedure

Data collection took place in a classroom setting during school hours. The research team provided a standardized explanation of the study objectives and procedures before distributing the questionnaires. Participation was voluntary, with written informed consent obtained from parents or guardians and verbal assent from all participating students. The process was supervised to ensure understanding and minimize response bias.

2.5 Variables and Measurement

Key variables analyzed from Part A included:

- Training status for first aid and CPR (none, trained in school, or trained through a community programme)
- Confidence levels in performing first aid and CPR (not confident, somewhat confident, confident, or very confident)
- Perceived importance of first aid and CPR training (very important, somewhat important, neutral/not sure, or not important)

Additional items explored participants' prior exposure to emergency situations and their motivations for learning life-saving skills (see Supplementary Tables for full item listing).

2.6 Data Analysis

Completed questionnaires were coded and analyzed using a statistical software package. Descriptive statistics (frequencies and percentages) were computed to summarize demographic characteristics, training exposure, confidence levels, and awareness of CPR and first aid. Results were presented in tabular form to illustrate baseline distributions.

2.7 Ethical Considerations

Ethical approval was obtained from the International Islamic University Malaysia Research Ethics Committee (IIUM IREC, ID: IREC 2024-212), the Persatuan Jaringan Islam Global Masa Depan (JREC), and the administrative committee of the Rohingya Education Centre. Confidentiality and anonymity were maintained throughout, with no identifying information collected. Participation posed minimal risk, and all data were used solely for research purposes.

3. Results

3.1 Demographic Characteristics

A total of 61 schoolchildren participated in the study as shown in table 1. The gender distribution was nearly equal, comprising 50.8% males and 49.2% females. The participants' ages ranged from 7 to 15 years, with the majority clustered in the 10–12 years (40.9%) and 13–15 years (42.6%) age groups, while 16.4% were aged between 7 and 9 years. Most respondents (63.9%) were enrolled in Primary 4–6, and 36.1% were in Primary 1–3. This distribution reflects the target population of upper primary school-aged children within the refugee education setting.

3.2 Motivations for Learning Life-Saving Skills

Participants reported various motivations for learning basic life-saving techniques such as first aid and cardiopulmonary resuscitation (CPR). The most frequently cited motivation was the desire to help family members (50%), followed by being prepared for emergencies (30%), and helping friends (20%). This indicates a strong family-centered orientation and an altruistic sense of responsibility among the children, reflecting early prosocial attitudes consistent with collectivist cultural values.

3.3 Awareness and Previous Training in Life-Saving Skills

A considerable knowledge and exposure gap was evident among respondents. For first aid, 73.8% (n=45) had never received any formal training, while 16.4% (n=10) had been trained in school settings, and 9.8% (n=6) had participated in community-based programs. Similarly, CPR training was limited; 88.5% (n=54) had no prior training, whereas only 8.2% (n=5) reported receiving training in school, and 3.3% (n=2) through community activities. These findings highlight a substantial lack of structured life-saving education among the refugee school population, underscoring the need for early intervention and capacity-building initiatives.

3.4 Confidence Levels in Performing Life-Saving Skills

Self-reported confidence levels corresponded closely with prior training exposure. For first aid, 74% of participants reported being "not confident," 20% "somewhat confident," and only 7% "confident." None of the respondents reported being "very confident." In contrast, confidence levels in CPR were even lower, with 82% reporting "not confident," 13% "somewhat confident," 3% "confident," and 2% "very confident." Overall, participants demonstrated higher relative confidence in first aid compared to CPR, suggesting that CPR being more technical and invasive. is perceived as more complex and intimidating, particularly among younger students.

3.5 Perceived Importance of Life-Saving Skills

Despite limited training exposure, the majority of respondents recognized the critical importance of learning first aid and CPR. For first aid, 95% rated it as "very important" and 5% as "somewhat important." Similarly, for CPR, 98% rated it as "very important" and 2% as "somewhat important." None of the participants viewed these skills as unimportant. This universal agreement indicates an intrinsic appreciation for emergency preparedness, potentially influenced by lived experiences of vulnerability and limited healthcare access within the refugee community context.

3.6 Knowledge and Awareness Gaps

While general awareness was positive, specific knowledge of procedures was inconsistent. Only approximately half of the respondents correctly identified that CPR should be continued until professional medical help arrives. Misconceptions were also evident regarding the recovery position and airway-checking techniques. These findings reinforce the necessity for targeted educational modules emphasizing both theoretical understanding and hands-on skill mastery. Table 1 summarizes key demographic and training-related variables.

Table 1
Participants' demographics and life-saving skill profiles (N = 61)

Category	Subcategory	Percentage
Gender	Male	60%
	Female	40%
Age Groups	10-12 years	50%
	7-9 years	30%
	13-15 years	15%
	<7 years	5%
Education Level	Primary 1-3	55%
	Primary 4-6	45%
Motivation for Life-Saving Skills	To help family members	50%
	To be prepared in an emergency	30%
	To help friends	20%
First Aid Training	No	70%
	Yes	30%
CPR Training	No	80%
	Yes	20%
Confidence in First Aid	Not confident	40%
	Somewhat confident	30%
	Confident	20%
	Very confident	10%
Confidence in CPR	Not confident	60%
	Somewhat confident	20%
	Confident	15%

	Very confident	5%
Perceived Importance of Learning	First Aid - Strongly agree	70%
	First Aid - Agree	20%
	First Aid - Neutral or Disagree	10%
	CPR - Strongly agree	65%
	CPR - Agree	25%
	CPR - Neutral or Disagree	10%
Witnessed Situations Needing Assistance	First Aid	25%
	CPR	10%

3.7 Witnessed Situations Requiring Life-Saving Interventions

A quarter of participants (25%) reported having witnessed situations that required first aid, while 10% had observed incidents potentially requiring CPR. Descriptions included events such as bleeding injuries and episodes of shortness of breath, indicating exposure to real-life emergencies. Such experiences likely reinforced their motivation to acquire life-saving competencies.

3.8 Summary of Findings

The findings indicate a high level of interest but low levels of formal training and confidence in performing basic life-saving skills among refugee schoolchildren. Training exposure significantly influences self-efficacy in performing first aid, whereas CPR remains an area requiring further emphasis. Importantly, participants' unanimous agreement on the importance of these skills presents a promising foundation for subsequent training interventions and educational integration within refugee school programs.

4. Discussion

This baseline assessment reveals a clear gap between the perceived importance of life-saving skills and the actual preparedness of refugee schoolchildren in Kuantan, Malaysia. While almost all participants recognized the value of cardiopulmonary resuscitation (CPR) and first aid, formal training exposure was minimal, and self-reported confidence levels were notably low. This finding aligns with previous studies indicating that structured life-saving education significantly improves children's confidence, willingness to act, and responsiveness in emergency situations [1,4,5].

The low confidence and limited prior exposure to CPR and first aid among participants underscore the need to prioritize such education within refugee learning environments. Similar outcomes were reported by a previous study who found that despite widespread awareness of CPR among Malaysian primary school children, practical competence remained poor without formal instruction[6]. Moreover, lower confidence in CPR compared to first aid observed in this study mirrors global patterns, likely due to the perceived complexity and fear of causing harm during chest compressions [2,12].

Given that most participants were between 10 and 15 years old, training content must be developmentally appropriate. Prior research emphasizes that experiential, hands-on learning through demonstrations, role-play, and repetition enhances engagement and retention in younger learners [2,13]. From a global perspective, early introduction of CPR and first aid aligns with the World Health Organization's [14] call for inclusive, community-based emergency preparedness programs, particularly in marginalized and displaced populations [14]. Life-saving skills training not only fosters individual competence but also contributes to building resilience within humanitarian contexts [7].

However, certain limitations should be acknowledged. The study involved a relatively small sample (n = 61) from a single education centre, which limits the generalizability of findings. Furthermore, data were derived from self-reported questionnaires without objective skill assessment, introducing potential reporting bias. Despite these constraints, this study provides an important foundation of baseline evidence regarding the readiness and perceptions of refugee children toward life-saving education a population that remains underrepresented in the literature.

Overall, the study extends existing evidence by situating life-saving education within the context of refugee schooling in Malaysia, thereby contributing new insights into the intersection of health literacy, educational equity, and humanitarian resilience.

5. Implications and Recommendations

The findings have significant implications for inclusive and equitable health education within refugee schools. The gap between high perceived importance and low preparedness underscores the urgency of structured, developmentally appropriate, and sustainable interventions. Recent systematic reviews confirm that school-based training in life-saving skills significantly enhances knowledge, confidence, and willingness to act among children [13,15].

To address these needs, future implementation phases should consider:

1. **Interactive and experiential learning:** Incorporate scenario-based simulations, role-play, and peer-teaching. Evidence indicates that hands-on modalities improve retention and confidence compared to lecture-only approaches [16].
2. **Age-appropriate adaptation:** Materials should use simplified language, visual aids, and repetitive reinforcement tailored to primary-level learners. Studies have shown that age-appropriate delivery enhances engagement and knowledge retention [13].
3. **Periodic refresher training:** Regular reinforcement sessions are essential, as retention of CPR and basic life support (BLS) skills declines over time [17].
4. **Empowering teachers and community facilitators:** Utilizing schoolteachers, community volunteers, or trained peer educators ensures sustainability and contextual relevance. Recent reviews highlight that teacher- and peer-led CPR programs can achieve outcomes comparable to health professional-led training [4].
5. **Evaluation and longitudinal monitoring:** Future phases should integrate pre- and post-intervention assessments and follow-up evaluations to measure learning outcomes, confidence, and performance over time.
6. **Integration into broader resilience frameworks:** Embedding life-saving education within refugee health literacy and empowerment programs can foster sustainable community preparedness and self-reliance [14,18].

By implementing these strategies, educators and policymakers can bridge the gap between awareness and action, empowering refugee schoolchildren as active agents of safety and resilience within their communities.

6. Conclusion

This baseline study highlights a significant mismatch between the strong perceived importance of life-saving skills and the limited preparedness among refugee schoolchildren in Malaysia. While the motivation to learn is evident, the lack of structured CPR and first-aid training restricts their ability to respond effectively during emergencies. The small sample size and single-centre focus limit generalizability; however, the study provides valuable groundwork for intervention-based research

in humanitarian education settings. Moving forward, comprehensive and contextually adapted training programs incorporating experiential learning, teacher involvement, and ongoing evaluation are vital to equipping refugee youth with essential emergency response competencies. Such initiatives not only enhance individual readiness but also strengthen collective resilience, contributing meaningfully to the global agenda for equitable, life-saving education among vulnerable populations.

Acknowledgements
The authors gratefully acknowledge the cooperation and participation of the students and teachers from the Rohingya Education Centre, Kuantan. Special appreciation is extended to the International Islamic University Malaysia (IIUM) for funding this research through the **Action Research Grant (ARG24-003-0003)**. The authors also thank all individuals and community partners who contributed to the smooth execution of this study.

Conflict of Interest
The authors declare that there are no conflicts of interest associated with this publication.

Author Contributions
TS@SJ: Conceptualisation, drafting, and finalisation of the manuscript.
MSN: Concept development, study design, and approval of the final version.
ZAS: Literature review and theoretical support.
MKCH: Evaluation of instrument suitability and validation.
MKZHF: Data management and statistical analysis.
CACA: Data interpretation and synthesis.
KKW: Contribution to discussion and critical review of the manuscript.
RYS: Literature search and reference compilation.

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