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Bridging The Policy-To-Practice Gap: A Narrative Review of School-Based First Aid Training Frameworks For Teachers in Abu Dhabi

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ABSTRACT

Background: Schools are often the first setting where children experience sudden medical emergencies and physical injuries. In Abu Dhabi, school health and safety regulations require safe learning environments and ensure staff are prepared through emergency response training. Despite the rapid institutionalisation of safety mandates by regulatory bodies, a profound disconnect persists between top-down expectations and actual classroom preparedness for emergency response. This review examined teachers' readiness to respond to school-based emergencies, explored limitations in existing first aid training programmes within the Gulf Cooperation Council (GCC) region, and developed a contextually relevant framework for Abu Dhabi schools.

Methods: A narrative review was conducted following Scale for the Assessment of Narrative Review Articles (SANRA) guidelines. A structured narrative review and evidence synthesis were conducted across PubMed, Scopus, Web of Science, ERIC, and Google Scholar for literature published between January 2010 and March 2026. Relevant studies, policy documents, and organisational reports were reviewed and analysed thematically. Findings were interpreted using Socio-Technical Systems (STS) Theory together with the Policy-Evidence-Context (PEC) framework.

Results: Thirty-five publications met the inclusion criteria. Three main themes emerged from the analysis, namely (1) technical subsystem deficits; (2) social subsystem barriers; and (3) operational and contextual integration failures between educational and health governance bodies.

Conclusion: The review highlights the need for a school-based first aid framework that reflects local policies, available evidence, and the realities of Abu Dhabi schools. The proposed framework offers a practical model for strengthening teacher preparedness and supporting a more coordinated approach to student safety.

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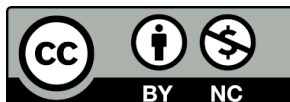
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Keywords: First aid training; Teacher preparedness; School health; Emergency response; Abu Dhabi

INTRODUCTION

Beyond academic education, schools are supposed to offer more. They are also in charge of maintaining a safe environment where pupils can study, engage in physical activities, and grow socially. Children commonly sustain injuries and medical issues in educational settings since they spend a significant amount of their day there. Asthma attacks, allergic reactions, seizures, sports-related injuries, and sudden cardiac arrest are examples of situations that may need to be treated immediately before emergency medical assistance is available (1,2). Delays in recognising symptoms or in administering basic first aid may worsen health outcomes and increase the risk of complications. Teachers and other school personnel are strategically positioned as the immediate frontline responders, and their actions during the "platinum ten minutes", the critical period before the arrival of Emergency Medical Services (EMS), are important (3-5).

Rapid population expansion and changing demographics in the Gulf Cooperation Council (GCC) region led to an enormous increase in school enrolment, putting pressure on the infrastructure for educational health and safety (6,7). According to epidemiological statistics, thousands of school-age children in Abu Dhabi have non-fatal injuries every year, mostly during physical education courses and educational activities like sports and extracurricular activities (8). As a result, regulatory organisations like the Abu Dhabi Public Health Center (ADPHC) and the Abu Dhabi Department of Education and Knowledge (ADEK) have gradually improved student safety, workplace health, and safety regulations (9,10). Evidence, however, indicates the possibility of a policy-to-practice gap between the actual implementation of school-based first-aid training programs and regulatory requirements. The majority of current laws outline what schools must do, but they offer less direction on how training in first aid should be provided, monitored, and maintained over time (11). Because of this, a lot of schools use commercially accessible training programs that were created outside of the United Arab Emirates. Although these courses might meet certification standards, they might not always take into account local emergency protocols, legal frameworks, organisational structures, or cultural norms. As a result, there may be a

discrepancy between the goals of regulations and regular school operations (12,13).

The unique characteristics of Abu Dhabi's educational workforce, in which more than 80% of students attend private schools, where teachers come from a diverse variety of ethnic, linguistic, and professional backgrounds, further complicate the issue (11,35). Different experiences with emergency response systems, diverse native languages, and varying baseline health literacy are all consequences of this faculty diversity. Additionally, whereas more comprehensive GCC studies provide insightful empirical information about teacher knowledge deficiencies, they represent different regulatory systems. As a result, an Abu Dhabi-specific framework is needed to match the operational realities of Abu Dhabi's multi-cultural educational environments with the different policy mandates of DOH and ADEK.

This study employs the Policy-Evidence-Context (PEC) framework and Socio-Technical Systems (STS) Theory to investigate these concerns (14,15). Such points of view encourage an analysis of how local contextual elements, organisational structures, and evidence-based approaches interact to influence emergency preparedness. This study aims to identify significant gaps in current practices and build a conceptual framework that is both evidence-informed and contextually appropriate by combining worldwide data with regional policy requirements and the actual circumstances of Abu Dhabi schools.

Specifically, the review aims to:

1. Examine current levels of teacher readiness to respond to school-based emergencies.
2. Identify limitations within existing first aid training approaches used in schools across the GCC region.
3. Develop a policy-informed and context-sensitive framework to support first aid training for teachers in Abu Dhabi.

By achieving these objectives, the study intends to add to current conversations around preparedness for emergencies and school safety while providing educators, politicians, and public health stakeholders with useful insights.

Theoretical Underpinning for Review

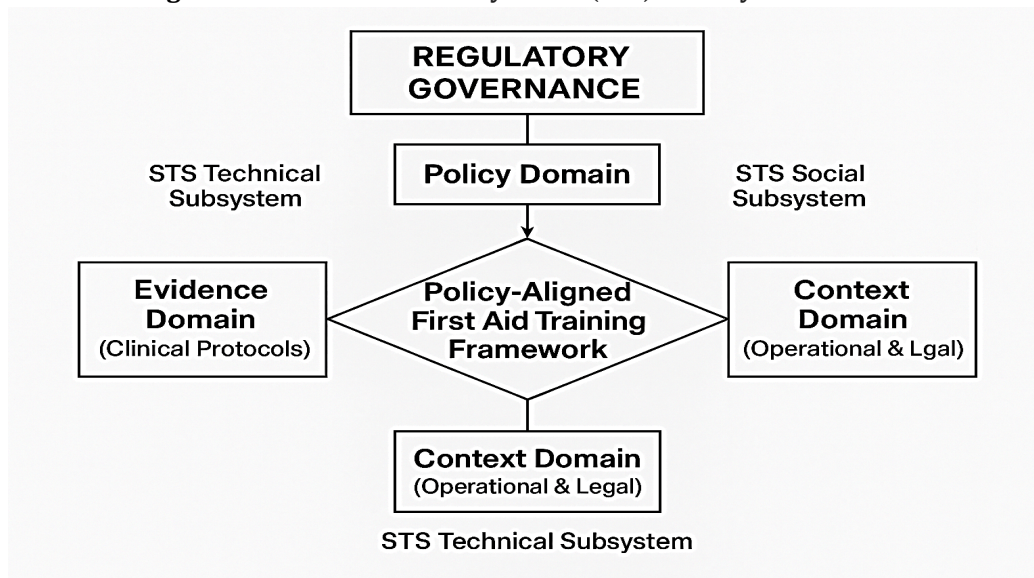
This review applies a systems-oriented approach that extends beyond individual knowledge and behavioural models to investigate systemic weaknesses in school-based emergency response. Although theories like the Adult Learning Theory and the Health Belief Model offer insights into learning and motivation, they are less appropriate for describing how contextual, organisational, and regulatory factors affect emergency preparedness in schools (16).

Therefore, the Policy-Evidence-Context (PEC) framework and Socio-Technical Systems (STS) Theory are integrated in this study. When combined, these frameworks offer an organised lens through which to examine how individual, organisational, and policy-level factors interact to establish teacher readiness.

Socio-Technical Systems (STS) Theory

STS Theory, which was first developed by the Tavistock Institute, suggests that the alignment of two interdependent subsystems—the technical subsystem, which includes aspects like policies, procedures, training resources, equipment, and technologies, and the social subsystem, which includes aspects like personnel, organisational culture, communication, and behavioural factors—determines how efficiently an organisation performs [17,18]. STS was used to investigate how social variables, such as teacher confidence, perceived duty of care, and cultural diversity, interact with technical aspects, such as training curricula and regulatory requirements, in the context of school-based first aid training. According to the idea, both subsystems must be simultaneously optimised to ensure sustained preparation for it.

Figure 1: Socio-Technical Systems (STS) Theory Framework



The Policy–Evidence–Context (PEC) Framework

This review employs the Policy-Evidence-Context (PEC) framework, which is derived from implementation and knowledge-translation literature and emphasises the integration of policy priorities, research evidence, and local contextual realities in program design and implementation, to supplement the systems perspective provided by STS (19). There are three domains in the framework:

- i. Policy: It includes accountability systems,

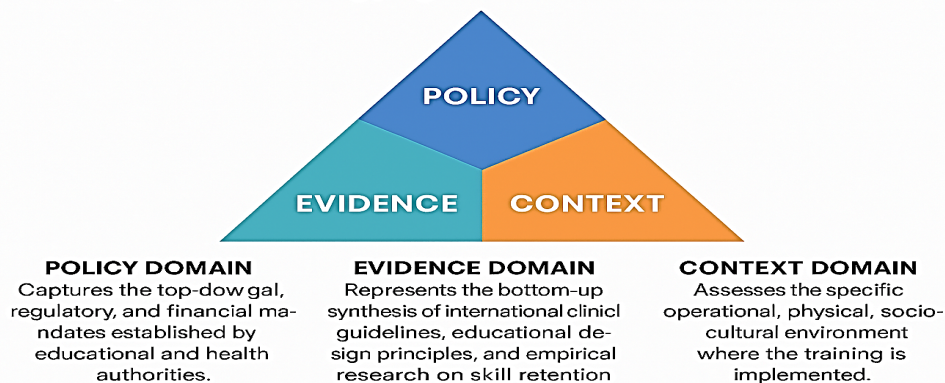
governance frameworks, and legal requirements

- ii. Evidence: It includes empirical research, clinical guidelines, and best practices in education.
- iii. Context: It includes operational, cultural, and organisational elements affecting performance.

The PEC framework functioned as the evidence-synthesis and translation mechanism in this study, allowing the evaluation of how regional policy requirements and worldwide first aid standards might be modified for the Abu Dhabi school setting.

Figure 2: The Policy–Evidence–Context (PEC) Framework**THE PEC INTEGRATED MODEL**

A conceptual framework that categorizes the development of professional training programs into three distinct domains.



A thorough assessment of school emergency readiness became feasible by the combination of STS and PEC. While PEC directs the transformation of policy standards and evidence into standards of practice that are appropriate for the specific environment, STS offers an explanatory framework for understanding the interconnections between technological and social system components. Together, these concepts led to the creation of a first aid training framework for Abu Dhabi teachers that was both locally applicable and in line with regulations.

METHODS

This study employed a narrative review approach to examine the current evidence on school-based first aid training for teachers and to explore how existing evidence could inform the development of a contextually appropriate framework for Abu Dhabi schools. A narrative review was considered suitable because the purpose of the study was not to determine effect sizes or conduct a meta-analysis, but rather to integrate findings from diverse sources, including empirical studies, policy documents, practice guidelines, and educational literature. The review was guided by the principles outlined in the Scale for the Assessment of Narrative Review Articles (SANRA) to support methodological transparency and reporting quality.

Search Strategy

A structured literature search was undertaken between January and March 2026. Five electronic databases were searched: PubMed, Scopus, Web of Science, ERIC, and Google Scholar. The search strategy employed

Boolean operators to combine targeted keywords, including: ("first aid training" OR "emergency preparedness" OR "CPR training") AND ("schoolteachers" OR "educators" OR "school staff") AND ("United Arab Emirates" OR "Abu Dhabi" OR "Gulf Cooperation Council" OR "Saudi Arabia").

Inclusion and Exclusion Criteria

The inclusion criteria prioritised peer-reviewed empirical studies, systematic reviews, and grey literature from major health organisations (WHO, IFRC, AHA) published between January 2010 and March 2026. Non-peer-reviewed opinion pieces, studies restricted to hospital-based clinical professionals, and research with no direct relevance to school settings were excluded. The search strategies are summarised in **Table 1**.

Data Extraction and Synthesis

The initial screening was conducted independently by two reviewers. Any disagreements regarding eligibility were resolved through discussion and consensus among the reviewers. The initial search across five electronic databases yielded 1,038 records. After removing duplicates and screening titles and abstracts against predefined eligibility criteria, 315 articles were retrieved for full-text evaluation. Ultimately, 35 peer-reviewed articles and grey literature documents met all inclusion criteria and were selected for thematic synthesis. The SANRA-Compliant Literature Search and Selection Flow and the characteristics of included studies are shown in **Figure 3** and **Table 2**.

Table 1: Search Strategy and Eligibility Criteria

Category	Details
Databases	PubMed, Scopus, Web of Science (WOS), ERIC, Google Scholar
Keywords	("first aid training" OR "emergency preparedness" OR "CPR training") AND ("school teachers" OR "educators" OR "school staff") AND ("United Arab Emirates" OR "Abu Dhabi" OR "Gulf Cooperation Council" OR "Saudi Arabia")
Inclusion Criteria	Peer-reviewed empirical studies, systematic reviews, and grey literature (WHO, IFRC, AHA); Published January 2010 and March 2026
Exclusion Criteria	Non-peer-reviewed opinion pieces; studies on hospital-based clinical staff; Studies irrelevant to school settings

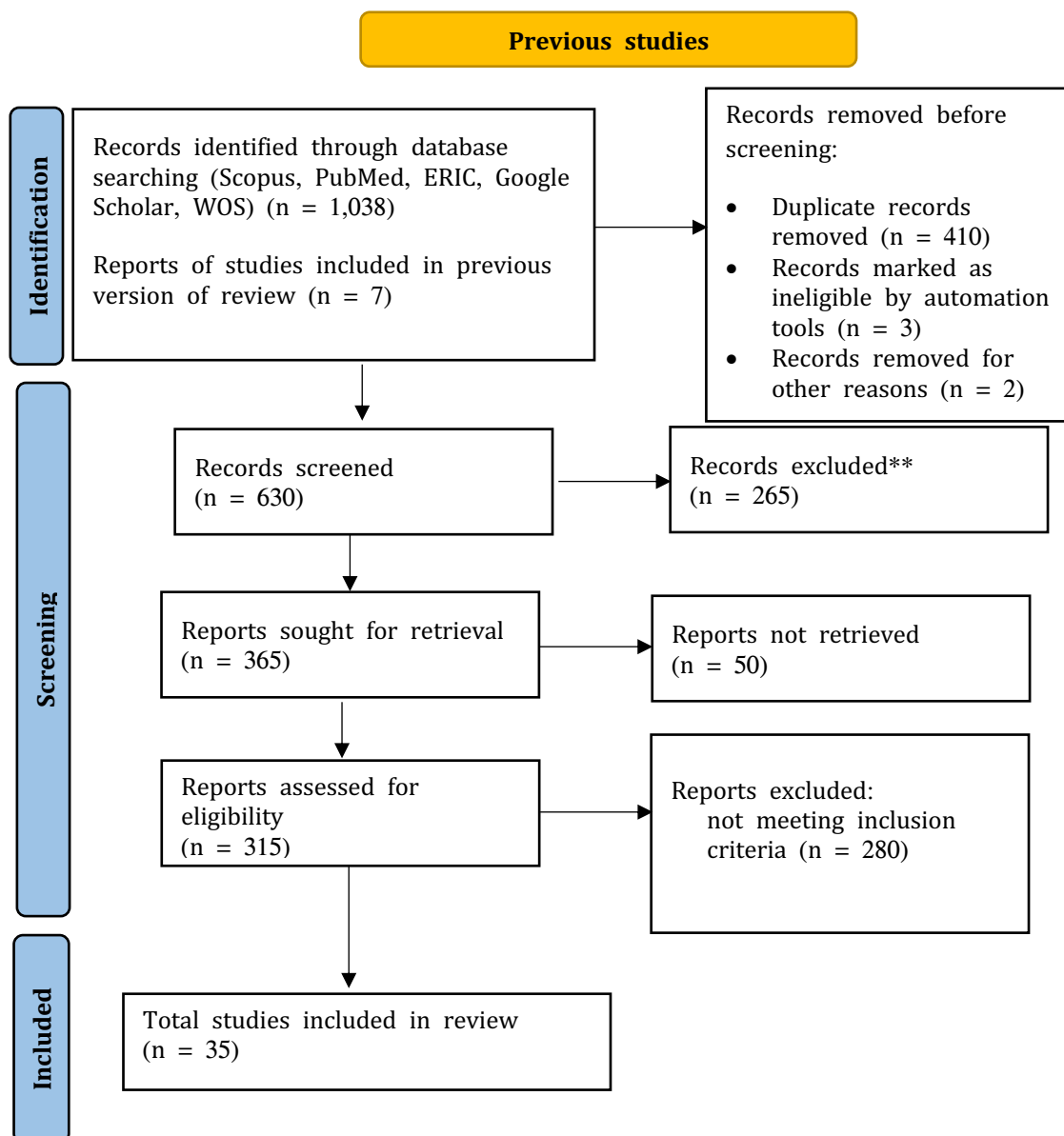
Figure 3: SANRA-Compliant Literature Search and Selection Flow Diagram

Table 2: Characteristics of Included Studies

Characteristic	Number
Cross-sectional studies	4
Reviews	4
Policy documents	7
GCC studies	2
UAE-specific studies	6
International studies	12
Total studies included in review	35

Following article selection, thematic synthesis was undertaken through iterative coding and categorisation of key findings. Emerging themes were subsequently mapped onto the Socio-Technical Systems (STS) framework and the Policy-Evidence-Context (PEC) domains. These syntheses informed the development of the proposed conceptual framework.

RESULT

Thematic Synthesis of the Literature

The thematic synthesis of the literature and policy frameworks identified three overarching themes. These findings directly address the review's objectives by assessing baseline readiness (Aim 1), identifying gaps in standardised curricula (Aim 2), and establishing the evidence base for an adapted, policy-aligned training framework (Aim 3). Synthesised through the dual lenses of Socio-Technical Systems (STS) Theory and the Policy-Evidence-Context (PEC) Integrated Model, the results illustrate how technical, social, and contextual domains intersect to influence emergency preparedness in schools.

Theme 1: Technical Subsystem Deficiencies

This theme identifies the structural and clinical gaps in current training. An important synthesis of the literature reveals significant vulnerabilities in the technical training models used within educational environments (20-22).

Sub-theme 1.1: Global Gaps in Teacher Knowledge and Competency Retention

International evidence highlights a persistent, cross-national deficit: despite a high motivation to safeguard children, educators and administrators globally demonstrate insufficient objective first aid knowledge and emergency proficiency (23,24). A primary technical weakness is the rapid skill decay phenomenon (21). Empirical data indicate that

both theoretical knowledge and CPR psychomotor skills begin to decline as early as three to six months post-certification (25). Consequently, standard commercial training intervals, typically occurring every two to three years, are clinically insufficient for maintaining emergency response readiness among nonmedical personnel (26).

Sub-theme 1.2: Empirical Evidence of Technical Disconnect in the GCC

Studies conducted across the GCC region, particularly in Saudi Arabia (KSA) and the UAE, reflect global concerns and underscore unique regional challenges (27,28). Alruwaili et al. (2024) found that although teacher awareness of childhood emergencies was high (97%), more than 40% of teachers admitted to being unable to manage emergencies effectively in the classroom. Alarming, 59.6% could not identify the correct response to choking incidents, and 15.6% to 20.8% were unable to demonstrate basic CPR skills (29). Similarly, Abdelrahman et al. (2024) reported that while the willingness to intervene was strong among educators (79.2%), actual competency remained lacking, as two-thirds (66.6%) had not received formal training (30). Collectively, these findings highlight that operational under-preparedness persists, largely because of an overreliance on generic and non-contextualised training programmes (31).

Theme 2: Social Subsystem Barriers

The social subsystem, comprising the human, cultural, and legal actors, plays an equally decisive role in determining first aid outcomes.

Sub-theme 2.1: The "Confidence Gap" and Legal Apprehension

The synthesis identified significant apprehension regarding potential legal repercussions for aid provision (32). Although

the UAE's Good Samaritan Law (2020) provides full civil and criminal immunity, public awareness remains low (33,34). Within schools, teachers continue to express a "confidence gap" (13). They are theoretically aware of safety, but their behaviour is restricted by perceived liability because standard international training does not address local legal protections.

Sub-theme 2.2: Cultural and Linguistic Diversity in School Settings

The UAE's diverse teaching faculty, comprising Arabic, English, Tagalog, and South Asian language speakers, creates a complex social environment (35). The literature highlights that presenting emergency instructions exclusively in English, without cultural or linguistic sensitivity, undermines comprehension and increases cognitive load during crisis (12).

Theme 3: Operational and Contextual Integration Failures

The third theme examines the failure to integrate training with site-specific school logistics and regional infrastructure, establishing the evidence base for the framework proposed in this review.

Sub-theme 3.1: Multi-Sectoral School Health Governance

School safety in Abu Dhabi is governed by a fragmented oversight structure involving ADEK, OSHAD, and DOH/ADPHC. While public health guidelines prioritise clinical-to-hospital transitions, educational regulations focus primarily on administrative compliance (9,10). Teachers are often caught in the gap between these two domains, receiving training that is either too clinically complex or too administratively abstract to be effectively applied during a playground emergency.

Sub-theme 3.2: Environmental and Site-Specific Logistics

Generic training often fails to account for school-specific infrastructure such as the location of AEDs and emergency signalling, or localised environmental hazards. In the GCC, extreme desert climates present unique risks, including severe heat-related illnesses like heat exhaustion and heatstroke. However, standard Western first aid curricula rarely prioritise these context-specific environmental factors (36).

DISCUSSION

This review's thematic synthesis validates a significant gap between policy and practice. By using the Policy–Evidence–Context (PEC) integrated model and the Socio-Technical Systems (STS) Theory, it becomes clear that this gap is not only the result of a lack of training but also a systemic failure to jointly optimise clinical protocols (the technical subsystem) with teachers' confidence and organisational culture (the social subsystem).

Reconciling Compliance with Real-World Readiness

A recurrent trend was identified across the literature: ongoing gaps in practical readiness are frequently accompanied by regulatory requirements and certification procedures. Despite the fact that many schools adhere to health and safety rules, research from GCC and worldwide studies shows that when presented with actual situations, instructors often express hesitation. This discrepancy implies that meeting training standards may not always lead to the capacity to respond to emergencies effectively (12).

One important observation from the reviewed literature is the difference between knowledge acquisition and skill retention. Several studies have reported that first aid and CPR competencies decline over time when practice opportunities are limited. Consequently, a single certification course may provide initial competence but may not be sufficient to sustain preparedness over prolonged periods. From a practical perspective, schools must consider how emergency response skills can be reinforced through regular drills, refresher activities, and scenario-based learning rather than relying exclusively on periodic certification programmes (14,29,30).

In order to address this gap, technological approaches like clinical guidelines must be optimised in conjunction with social aspects like institutional safety culture. Administrators must change their understanding of first aid from an external training event to a deeply embedded, internally sustained organisational habit in order to attain real-world preparedness.

Translating Legal Theory into Active Teacher Confidence

The review also highlights the influence of organisational and behavioural factors on emergency preparedness. Many teachers express a willingness to assist students during emergencies, yet confidence levels often remain lower than expected. This finding suggests that technical knowledge alone is not enough to encourage effective intervention. Confidence appears to be shaped by several factors, including previous training experiences, familiarity with emergency procedures, perceived responsibility, and concerns regarding legal consequences. In Abu Dhabi, the existence of legal protections does not automatically ensure that teachers feel comfortable acting during emergencies. Greater awareness of relevant legislation and clearer guidance within training programmes may help address these concerns (25,32).

Addressing Skill Decay Through Operational Integration

Another notable issue relates to the diversity of Abu Dhabi's educational workforce. Teachers work within highly multicultural environments and bring different educational backgrounds, languages, and levels of experience. Training packages developed in other countries may not always reflect local school procedures or emergency response systems. This raises questions about the suitability of generic training programmes for schools operating within the UAE context. The findings reviewed here suggest that contextual adaptation should be regarded as a central component of programme design rather than an optional addition.

A primary operational weakness identified in this review is the reliance on biannual,

commercial certification models, which are clinically inadequate, given that significant skill decay occurs within 3–6 months (21,25). The proposed framework responds to this limitation by operationalising the STS principles to embed technical training directly into existing social workflows (37). Periodic refresher activities may help maintain psychomotor skill retention, although their effectiveness among schoolteachers in Abu Dhabi remains to be systematically investigated (38).

The proposed framework was developed in response to this challenge and seeks to provide a mechanism through which policy expectations, evidence-based practice, and local operational realities can be considered together. Interpreting these findings through the lens of Socio-Technical Systems (STS) Theory highlights the importance of considering preparedness as a system-level outcome rather than an individual attribute. Effective emergency response depends on the interaction of people, procedures, equipment, communication processes, organisational culture, and regulatory support. Weakness in any one of these areas may reduce overall readiness. Similarly, the Policy-Evidence-Context (PEC) framework underscores the importance of aligning regulations with available evidence and local implementation conditions. Taken together, these perspectives suggest that sustainable improvements in school emergency preparedness are unlikely to be achieved through training interventions alone. Broader organisational and policy considerations must also be addressed. The components of the proposed conceptual framework are shown in **Table 3**.

Table 3: Components of the Proposed Conceptual Framework

Framework Domain	Component	Supporting Evidence
Policy	ADEK/ADPHC alignment	(9,10)
Evidence	CPR and first aid competencies	(25,26)
Context	Multilingual training	(12,35)
Social System	Confidence and legal literacy	(32-34)
Technical System	Practical simulations and AED drills	(21,38)
Evaluation	Competency reassessment and refreshers	(25,38)

Based on the identified evidence gaps, this review proposes an integrated school-based first aid training framework for teachers in Abu Dhabi (**Figure 4**). The framework re-conceptualises emergency response as a collective socio-technical capability rather than

an isolated individual responsibility. Drawing on the combined principles of Socio-Technical Systems (STS) Theory and the Policy-Evidence-Context (PEC) framework, it recognises that effective first aid performance depends not only on teachers' knowledge and skills but

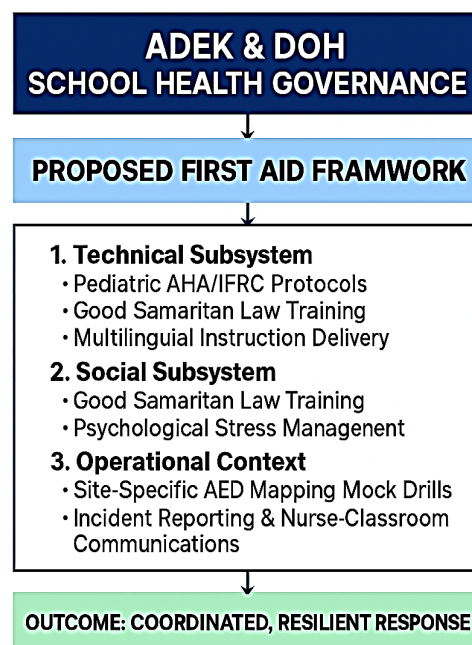
also on supportive policies, organisational culture, operational processes, and contextual realities.

The framework consists of three interrelated domains. First, the Technical Subsystem incorporates evidence-based clinical protocols, legal awareness training, multilingual instructional resources, and access to emergency equipment. This domain addresses deficiencies in curriculum content, standardisation, and skills acquisition identified in the reviewed literature. Second, the Social Subsystem focuses on human and organisational factors, including teacher confidence, psychological preparedness, willingness to intervene, and school safety culture. By addressing barriers such as fear of liability, stress during emergencies, and limited self-efficacy, this domain aims to strengthen the readiness among school personnel. Third, the Operational Context domain translates policy and training into day-to-day practice through site-specific emergency planning, AED accessibility mapping, communication pathways between teachers and school nurses, reporting systems, and regular simulation exercises.

The three domains are embedded within the wider governance structure of the Abu Dhabi Department of Education and Knowledge (ADEK) and the Department of Health (DOH), reflecting the policy component of the PEC framework. Together, these domains establish an integrated pathway linking policy requirements, evidence-based practice, and contextual implementation. The intended outcome is a coordinated, resilient, and sustainable school emergency response system capable of moving schools beyond administrative compliance towards genuine emergency preparedness.

The framework proposed in this review should therefore be viewed as a conceptual starting point rather than a definitive solution. Its purpose is to organise existing evidence into a structure that may guide future programme development, implementation, and evaluation. Because the model has not yet been tested in practice, its effectiveness remains uncertain. Future studies should examine whether the framework improves teacher confidence, knowledge retention, and emergency response performance in real educational settings.

Figure 4: Proposed School-Based First Aid Training Frameworks for Teachers in Abu Dhabi



CONCLUSION

This narrative review examined the available literature regarding teachers' first aid preparedness, curriculum limitations, and

contextual challenges in Abu Dhabi and the GCC region. The findings indicate that there are still significant gaps between everyday school readiness and regulatory expectations, even in spite of increased policy attention to

school safety. Evidence identified deficiencies in technical skills, barriers affecting teachers' confidence, and challenges in translating policy requirements into practical action. Additionally, the review shows that emergency preparedness is more than just a matter of personal competency. Instead, a mix of organisational, social, technical, and contextual factors shape it. Using STS Theory and the PEC framework, this study integrated evidence from research, policy, and practice to develop a conceptual framework that reflects the realities of Abu Dhabi's educational environment. While the proposed framework offers a structured approach for improving school-based emergency preparedness, it remains theoretical and requires empirical validation. Future research should investigate its feasibility, acceptability, and effectiveness across different school settings. Particular attention should be given to long-term skill retention, teacher confidence, implementation barriers, and the impact of training on real-world emergency outcomes.

LIMITATIONS AND RECOMMENDATIONS

This review has several limitations. First, despite the structured search strategy, narrative reviews are inherently susceptible to selection bias and subjective interpretation. Second, only English-language publications were included, introducing potential language bias. Third, a formal methodological quality appraisal of included studies was not conducted, which limits the assessment of the evidence strength of the reviewed articles. Fourth, many included studies originated from neighbouring GCC countries rather than Abu Dhabi, limiting contextual transferability. Finally, the proposed framework is conceptual and has not yet been empirically tested or validated. Consequently, its practical effectiveness should be evaluated in future studies.

Future research should prioritise the empirical validation of the proposed framework by measuring its impact on teachers' cognitive knowledge, real-world response time, and self-efficacy alongside actual clinical outcomes during school-based emergencies. Longitudinal studies are essential to evaluate the framework's long-term impact on skill retention, behavioural confidence, and student safety across diverse educational settings in the GCC. Furthermore, conducting a pilot study through an implementation science lens, specifically assessing organisational barriers,

teacher workload, and cultural adaptation, will provide important data necessary to refine the model for regional scalability and sustainability in the future.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHOR CONTRIBUTIONS

APS: Conducted the literature review, performed data analysis, and prepared the initial draft of the manuscript.

KTA: Served as the corresponding author, supervised the study, critically reviewed and finalised the manuscript, and managed the journal submission process.

DK: Contributed to the literature review, assisted with data analysis, and reviewed the manuscript.

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