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RESEARCH

Exploring the Mechanisms That Underpin an Effective Community First Aid Response: A Rapid Realist Review

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ABSTRACT

Background: Community First Aid (CFA) interventions aim to improve the capacity of a community to effectively respond to urgent and emergency health needs, by providing training and education or response services. With urgent and emergency services under sustained pressure, there is growing interest in understanding how targeted and tailored CFA interventions might help improve health outcomes and mitigate demand on the health system. Understanding the underlying mechanisms of effective CFA interventions can help optimize their design, delivery, and evaluation.

Methods: We conducted a rapid realist review to explore how CFA interventions work, for whom, and in what settings. MEDLINE was searched for relevant peer-reviewed articles and search results were supplemented with relevant grey literature and additional articles identified by the research team. Middle-range theory was drawn upon to help synthesize findings and formulate Context-Mechanism-Outcome configurations.

Findings: The majority of the 46 included articles focused on CFA training interventions. By drawing on the Theory of Planned Behavior, we formulated mechanisms which either tackle the barriers communities face, or leverage the existing strengths of communities, to improve perceived behavioral control, attitudes and social norms, all of which influence the intention to perform first aid.

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Conclusion: By understanding community needs and characteristics and how they influence effective CFA responses, interventions can be more sensitively designed and delivered, ultimately improving the intention of communities to perform effective FA. Communities should be involved in the co-design of CFA interventions.

ABSTRACT

Achtergrond: Community First Aid (CFA)-interventies zijn gericht op het verbeteren van de mogelijkheid van een gemeenschap om effectief te reageren op in de gezondheidszorg urgente en noodsituaties. Nu de spoedeisende hulp en hulpdiensten onder aanhoudende druk staan, is er een groeiend belang om te begrijpen hoe doelgerichte en op maat gemaakte CFA-interventies kunnen helpen de gezondheid te verbeteren en de vraag naar de gezondheidszorg te verminderen. Dit wordt bereikt door middel van training, educatie of het verbeteren van de responscapaciteit. Inzicht in de onderliggende mechanismen van succesvolle CFA-interventies kan helpen bij het optimaliseren van hun ontwerp, uitvoering en evaluatie.

Methoden: Om te onderzoeken hoe CFA-interventies werken, voor wie ze effectief zijn en in welke omstandigheden, hebben we een snelle realistische beoordeling uitgevoerd. We doorzochten MEDLINE naar relevante peer-reviewed artikelen en vulden deze aan met grijze literatuur en met door het onderzoeksteam geïdentificeerde aanvullende artikelen. Er werd gebruik gemaakt van de Middenbereiktheorie om de bevindingen samen te brengen en daaruit Context-Mechanisme-Uitkomst configuraties te formuleren.

Resultaten: Bij de meeste van de 46 geïncludeerde artikelen lag de focus op CFA-trainingsinterventies. Op basis van de Theorie van gepland gedrag identificeerden we mechanismen die óf barrières aanpakken waarmee gemeenschappen worden geconfronteerd, óf bestaande sterke punten van gemeenschappen benutten. Dit draagt bij aan het verbeteren van de waargenomen controle over gedrag, attitudes en sociale normen. Factoren die allemaal de hulpbereidheid beïnvloeden om EHBO te verlenen.

Conclusie: Een beter begrip van de behoeften en kenmerken van gemeenschappen, en hoe deze een effectieve CFA-respons beïnvloeden, maakt het mogelijk om interventies zorgvuldiger te ontwikkelen en uit te voeren. Dit vergroot uiteindelijk de bereidheid en het vermogen van gemeenschappen om effectieve eerste hulp te bieden. Gemeenschappen moeten worden betrokken bij het mee ontwikkelen van CFA-interventies.

MUHTASARI

Usuli: Huduma ya kwanza ya jamii (CFA) inalenga kuboresha uwezo wa jamii kukabiliana na mahitaji ya dharura za afya, kwa kutoa mafunzo na elimu au kutoa huduma. Kwa huduma za dharura na za dharura chini ya shinikizo endelevu, kuna maslahi ya kuongezeka kwa kuelewa jinsi hatua za Huduma ya kwanza ya jamii (CFA) zilizolengwa zinaweza kusaidia kuboresha matokeo ya afya na kupunguza mahitaji kwenye mfumo wa afya. Kuelewa njia za msingi za hatua bora za Huduma ya kwanza ya jamii (CFA) zinaweza kusaidia kuboresha muundo wao, utoaji, na tathmini.

Mbinu: Tulifanya ukaguzi wa haraka wa kina ili kuchunguza jinsi hatua za huduma ya kwanza ya jamii (CFA) zinavyofanya kazi, kwa nani, na katika mipangilio gani. Mfumo wa MEDLINE ulitafutwa kwa makala husika zilizopitiwa na rika na matokeo ya utafutaji yaliongezwa na fasihi husika ya kijivu na nakala za ziada zilizotambuliwa na timu ya utafiti. Nadharia ya masafa ya kati ilichorwa ili kusaidia kuunganisha matokeo na kuunda usanifu wa Muktadha-Mchakato wa matokeo.

Matokeo: Waliofanyiwa tafiti ni 46 pamoja na makala zilizozingatia hatua za mafunzo ya Huduma ya kwanza ya jamii (CFA). Kwa kutoa nadharia ya Tabia Iliyopangwa, tuliunda njia ambazo zinashughulikia vizuizi ambavyo jamii zinakabiliwa nazo, au kutumia nguvu zilizopo za jamii, kuboresha udhibiti wa tabia, mitazamo na kanuni za kijamii, ambazo zote zinaathiri nia ya kufanya huduma ya kwanza.

Hitimisho: Kwa kuelewa mahitaji na sifa za jamii na jinsi zinavyoathiri majibu bora ya huduma ya kwanza ya jamii (CFA), hatua zinaweza kuundwa kwa umakini zaidi na kutolewa, hatimaye kuboresha nia ya jamii kufanya Huduma ya kwanza. Jamii zinapaswa kuhusika katika kubuni ushirikiano wa hatua za huduma ya kwanza ya jamii (CFA).

INTRODUCTION

A timely and effective first aid (FA) response within the community, prior to the arrival of formal urgent or emergency medical services, is a critical component of the chain of survival (Michelland et al., 2023; Song et al., 2018; Yan et al., 2020). For non-life-threatening conditions and injuries, appropriate intervention can significantly improve health outcomes and reduce the burden on the healthcare system (Bennett et al., 2019). However, both the rate and quality of bystander intervention remains notably low, with significant variation across different countries and settings (Balhara et al., 2019; Liou et al., 2021; Oliver et al., 2017). A complex interplay of psychological, informational, and socioeconomic factors often hinders effective community first aid (CFA) responses (Heard et al., 2020). These barriers tend to be more pronounced in underserved communities who concurrently experience limited access to healthcare and higher rates of emergency hospital admissions (Dobbie et al., 2020; Ford et al., 2022). Despite the pressing need to improve CFA responses, there is limited evidence on what makes interventions effective across different social groups and settings (Dainty et al., 2022).

Research indicates that while FA education and training programs significantly enhance knowledge, skills, and confidence, these gains often diminish over time and do not consistently translate into effective helping behavior (Heard et al., 2020). Most FA training programs focus broadly on technical skills and knowledge acquisition, without adapting to the specific needs and characteristics of different community groups. Given the ongoing pressure on urgent and emergency care services, there is an increasing need to explore how targeted and tailored interventions can improve CFA responses in various communities. This rapid realist review synthesizes existing evidence on FA training and education interventions, focusing on how they may enhance CFA responses in distinct communities. The aim is to understand how these interventions work and use this knowledge to refine future interventions, from design and delivery to evaluation.

METHODS

We undertook a realist evidence synthesis, or realist review, according to the RAMESES (Realist And Meta-narrative Evidence Syntheses: Evolving Standards) guidelines (Wong et al., 2013). The protocol was prospectively registered on PROSPERO (ID: CRD42024506686). We chose to conduct a rapid realist review due to its methodological flexibility, allowing us to explore a wide range of interventions and prioritize evidence that provides explanatory causal insights.

Evidence searching and selection

A database search strategy, informed by scoping searches and subject knowledge held by the research team, was developed alongside an information scientist and used to search MEDLINE on 29th February 2024. We initially defined CFA interventions as any educational and training interventions (delivered in person, digitally, or through public health campaigns) as well as CFA response services (volunteer-led or commissioned). A community was defined broadly: at a population level

(including communities which are subject to specific inequality or disadvantage); communities defined by a specific health, social condition or state; and place-based communities.

Eligible study populations or participants included individuals of any age delivering or receiving the FA intervention, including recipients of FA or providers (including parents/caregivers, teachers, etc.). Studies across all global regions were potentially eligible, provided the context was considered relevant to the UK health and social care setting. Participants and populations with acute mental health needs or interventions exclusively delivering mental health FA in isolation were excluded due to anticipated differences in how the interventions work.

Two researchers (LS and MB) carried out an initial title and abstract screen. Realist reviews are theory-generating and what is considered as relevant evidence is often iteratively refined; given the paucity of evidence and explanatory insight on CFA response services retrieved, we decided to focus on educational and training interventions only. Additionally, due to the focus on community-level mechanisms, interventions delivered in workplace settings or occupational FA and interventions delivered by medical professionals were excluded. Scenarios requiring FA but not commonly encountered in UK settings (for example, venomous snake bites) were also excluded. Eligibility criteria is presented in Supplementary Table 1.

To ensure internal consistency following refinement of eligibility criteria, a second title and abstract screening was carried out by a third researcher (CM) and any discrepancies were discussed with the two initial reviewers. A selection of peer-reviewed and grey literature articles collected over time by one member of the research team (LS) and potentially relevant studies referenced by included studies were also screened for inclusion. Final selection by full-text review was based on the realist synthesis principles of relevance and rigor (Pawson et al. 2005), which prioritizes evidence providing ontological depth into plausible mechanisms linking intervention components with outcomes and the influence of context on these relationships. One researcher (CM) reviewed all full texts; 50% of exclusion decisions were reviewed by a second researcher, with no discrepancies.

Analysis and synthesis

Key descriptive information was extracted from each article into an Excel spreadsheet. Data pertaining to context (the setting within which the community FA intervention is enacted and characteristics of the community), proposed mechanisms (the resources put in place as a result of the intervention and the behavioral, emotional, or cognitive responses to them), and outcomes were extracted. Data were extracted from all sections of the articles so as to capture author interpretation of plausible theory underpinning interventions. Explicit or implicit use of middle-range theory (MRT) was also recorded.

The research team met to discuss emerging mechanisms, the plausibility of causal links of mechanisms with outcomes and the influence of context on these associations, paying attention to community-level enablers and barriers. This led to the search for existing evidence-based community taxonomies to help organize findings. MacQueen's five evidence-based "core dimensions of community" (2001) (locus, sharing, diversity, social ties, joint action) which describe the different facets of community groups was considered an appropriate framework to deductively categorize emerging mechanisms in relation to community context.

Context-mechanisms-outcome configurations (CMOs) were then formulated for each of the five community dimensions through retroduction, a process of developing and testing social theories underpinning observed phenomena through combining empirical evidence with existing evidence-based MRT and expert insight (from within the research team in this case) (McEwan et al., 2024). This process facilitated the consolidation of a long list of initial CMOs, derived from individual studies, into a shorter list. This allowed us to reach a level of abstraction where CMOs were theorized to represent the ways interventions work across contexts and settings.

RESULTS

Summary of included studies

A total of 2923 articles were retrieved from searching MEDLINE, with an additional 41 from handpicking and seven selected from backwards citation searching (Supplementary Figure 1). Following screening based on relevance and rigor, as described, 47 articles were selected for inclusion in the review. The majority of the included articles focused on school or nursery children or the general public, with most offering insight into FA training interventions (Table 1).

Theory of Planned Behaviour as middle-range theory

Several studies used the Theory of Planned Behavior (TPB) as a framework to explore how interventions

Category (number of articles)	References
Population of interest	
School or nursery school children (n = 18)	(Abelsson et al., 2020; Bohn et al., 2015; Bohn et al., 2013; Bollig et al., 2011; Buckley et al., 2021; Calicchia et al., 2016; Campbell, 2012; Carruth et al., 2010; De Buck et al., 2015; Del Rios et al., 2018; Fitzsimmons et al., 2023; Katona et al., 2022; Louis et al., 2022; Pivac et al., 2020; Plant & Taylor, 2013; Reveruzzi et al., 2020; Rossetto et al., 2020; Tse et al., 2023)
General public, bystanders (n = 13)	(Antevy, 2016; Arbon et al., 2011; Beletsky et al., 2012; Franklin et al., 2019; Heard et al., 2020; Kulnik et al., 2019; Miller & Pellegrino, 2018; Muise et al., 2019; Orkin et al., 2021; Peterson et al., 1999; Regard et al., 2020; Tan & Xi, 2019; White & McNulty, 2011)
Parents or caregivers for children (n = 4)	Baker et al., 2015; Burgess et al., 2018; Cowley et al., 2021; Kacan, 2022
Underserved or socioeconomically disadvantaged communities (n = 4)	(Andrade et al., 2019; Dobbie et al., 2020; Orkin et al., 2021; Tatebe et al., 2019),
FA volunteers or first responders (n = 3)	(Hallstrom et al., 2004; Timmons & Vernon-Evans, 2013; Wahyuni et al., 2020)
Older adults and informal carers (n = 3)	(Dolenc et al., 2022; Dolenc et al., 2023; Mills et al., 2020)
University students (n = 1)	(Shotland & Heinold, 1985)
Sports teams (n = 1)	(Badenhorst et al., 2019)
Type of intervention	
Training (n = 35)	(Abelsson et al., 2020; Andrade et al., 2019; Arbon et al., 2011; Badenhorst et al., 2019; Bohn et al., 2015; Bohn et al., 2013; Bollig et al., 2011; Buckley et al., 2021; Calicchia et al., 2016; Campbell, 2012; Carruth et al., 2010; De Buck et al., 2015; Del Rios et al., 2018; Dobbie et al., 2020; Dolenc et al., 2022; Dolenc et al., 2023; Fitzsimmons et al., 2023; Franklin et al., 2019; Heard et al., 2020; Kacan, 2022; Louis et al., 2022; Mills et al., 2020; Muise et al., 2019; Orkin et al., 2021; Peterson et al., 1999; Pivac et al., 2020; Plant & Taylor, 2013; Regard et al., 2020; Reveruzzi et al., 2020; Rossetto et al., 2020; Shotland & Heinold, 1985; Sun & Wallis, 2012; Tan & Xi, 2019; Tatebe et al., 2019; Tse et al., 2023; White & McNulty, 2011)
Educational information or campaigns (n = 4)	(Baker et al., 2015; Beletsky et al., 2012; Burgess et al., 2018; Cowley et al., 2021)
Community first aid response or volunteer initiatives (n = 4)	(Antevy, 2016; Hallstrom et al., 2004; Timmons & Vernon-Evans, 2013; Wahyuni et al., 2020)
Other (studies exploring barriers to community first aid responses) (n = 4)	(Dobbie et al., 2020; Katona et al., 2022; Kulnik et al., 2019; Miller & Pellegrino, 2018)

Table 1 Summary of included articles.

influenced intentions and actions, either to participate in FA training or to intervene. The TPB is a cognitive theory that suggests intention is the immediate driver of behavior. Intention is shaped by three factors: (1) behavioral beliefs about the likely outcomes of the behavior, (2) normative beliefs about social expectations regarding the behavior, and (3) control beliefs about one's ability to perform the behavior (Ajzen, 1991). These beliefs, in turn, influence attitudes, social norms, and perceived control—factors that determine behavior. While interventions designed to target these beliefs can influence behavior, the TPB itself does not explain the underlying mechanisms of interventions. Originally developed to study individual behavior, the TPB has since been applied to community-level and participatory interventions.

Given the alignment of our findings with these concepts, we chose to use TPB as a MRT to refine emerging CMOs. As shown in Figure 1, contextual enablers and barriers found to be associated with each community dimension are aligned with the TPB's 'determinants of intention', while responses to intervention components are represented by the 'determinants of behavior'. The identified outcomes are observable and measurable results of changed behaviors, theorized to result from the TPB 'determinants of behavior'.

Findings

Thirteen CMOs were identified across the five community dimensions. These explore how CFA interventions work in different community contexts, or in other words, how community context influences the responses communities can have to CFA intervention components. The findings are depicted in Figure 1 and a summary of individual CMOs can be found in Supplementary Table 2. MacQueen's analysis of community dimensions indicates that community groups can embody multiple dimensions, so some groups may be addressed under more than one of the following headings.

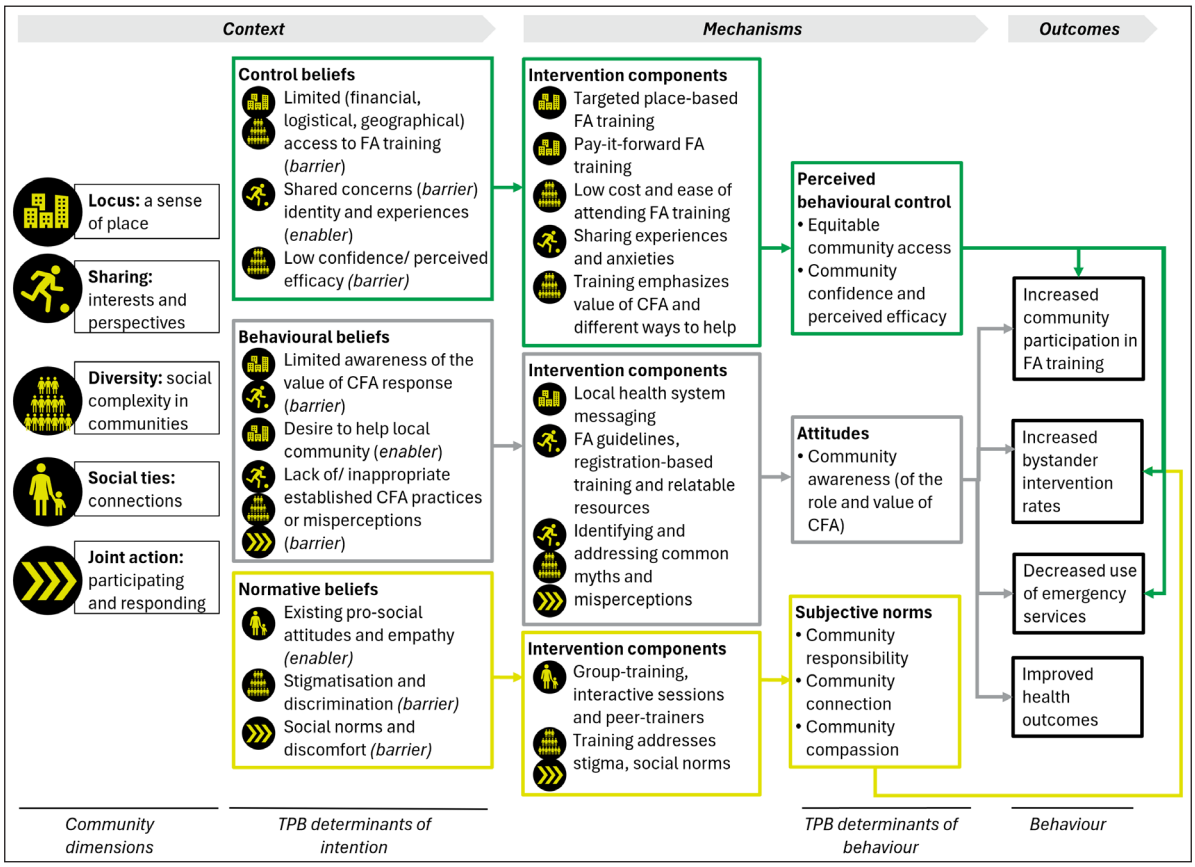

Figure 1 An overview of the adapted Theory of Planned Behavior (TPB) framework as applied to the findings of this rapid realist review.

Locus: communities with a sense of place

Communities with a sense of place included school communities, communities in low-resource or rural areas, and FA community responder groups. The CMOs associated with this community dimension illustrate how place-based strategies can tackle control and behavioral belief barriers to CFA responses by enhancing community access and awareness.

In socioeconomically deprived communities, financial and logistical barriers, along with limited employment opportunities, can reduce participation in FA training and responses (Orkin et al., 2021). Targeted school-based FA training initiatives can increase the number of people with FA skills in a community, offering equitable access and raising the number of trained individuals across all social groups. (Bohn et al., 2015; Bohn et al., 2013; Campbell, 2012). Incorporating a "pay-it-forward" aspect of FA training can amplify its reach through the sharing of knowledge and skills in place-based communities (Bohn et al., 2015; Del Rios et al., 2018). One study reported that FA-trained individuals sharing their knowledge with family and friends may contribute to a feeling of community resilience, as people feel safe in the knowledge that others around them are capable of providing FA in an emergency (White & McNulty, 2011).

Tailoring FA training to focus on prevalent local health issues, or those commonly experienced in place-based communities, such as farming communities or urban communities, and using local images and injury data content can promote community awareness of candidacy of certain conditions for FA (Andrade et al., 2019; Carruth et al., 2010; Orkin et al., 2021). This adaptation can make FA training more relevant and effective, promoting quicker and more appropriate responses to injuries and emergencies in defined local populations. Local health and care providers can promote awareness of the role of FA in relevant conditions and encourage people to intervene (Carruth et al., 2010; Orkin et al., 2021; Tan & Xi, 2019). Such task-shifting initiatives can reduce the burden on emergency services. This is particularly valuable in low-resource or remote rural communities with limited access to emergency healthcare where FA intervention before the arrival of emergency services is crucial for supporting positive health outcomes.

The proximity of volunteering opportunities can enhance participation in community FA responder programs, driven by a combination of convenience and a desire to help one's local community and see positive change (Timmons & Vernon-Evans, 2013). Ensuring FA volunteering opportunities are local can boost participation in community first responder groups, thereby increasing community capacity for responding to FA needs. Having such groups in local areas that can be easily contacted can decrease the reliance on emergency services. This local capacity is further supported by improved access to resources like AEDs and trauma kits, which, when coupled with training, can improve survival rates in emergencies (Andrade et al., 2020; Hallstrom et al., 2004).

Sharing: communities with shared interests or perspectives

Communities of *sharing* identified in the literature were those based on shared interests such as sports teams and motorists, as well as groups at similar life stages, such as parents or older adults and people with certain clinical conditions. These findings indicate how targeted and tailored CFA training which establishes best practices, draws on shared experiences, and tackles misperceptions, can improve CFA responses.

Targeted FA training and education that address attitudes and misconceptions held by certain communities can significantly improve community awareness. For example, a 'last aid' educational intervention on end-of-life care actively addressed misconceptions about death and dying, empowering relatives to provide care for their loved ones instead of resorting to emergency services (Mills et al., 2020). This change in individual attitudes and the challenge to entrenched professional healthcare hierarchies led to a gradual shift in community perspectives and awareness, strengthening the CFA response to end-of-life care. Similarly, an online FA training program designed to recognize seizures, destigmatize the condition, and educate bystanders on appropriate actions reported

significant improvements in participants' knowledge and self-efficacy (Fitzsimmons et al., 2023).

Several studies have assessed training initiatives linked to registration or membership of interest-based communities considered at high risk of injury. Basing FA training outside of required and commercial courses may increase the willingness to learn FA while increasing awareness of the role of FA within the specific community. For example, FA training linked to registration as a motorist was associated with the increased proportion of individuals with FA training within a community, enhancing overall community awareness of effective CFA responses (Arbon et al., 2011). However, there are concerns that the long-term effectiveness of mandatory training can be limited if there is no requirement for periodic refreshment of skills or where training is not tailored to differences in need within broadly defined interest-based communities. FA guidelines can establish best practices for sports teams and high-risk activities, but such top-down initiatives must be tailored to the local community context. In South Africa, a nationwide FA training program and minimum FA requirements for rugby coaches helped create a more unified and effective community response to injuries in some areas; however, effectiveness was reportedly limited due to limited adaptation to local socioeconomic, racial, and geographical contexts (Badenhorst et al., 2019).

FA training can be more effective when tailored to be sensitive to the shared experiences and identity of a community. A study of parents of children with intellectual disabilities who face a higher risk of self-injury found that FA training in a supportive group setting, where participants shared experiences, increased their comfort in discussing personal concerns. This supportive environment fostered a sense of community, which helped reduce anxiety and enhance parents' confidence in performing FA (Kacan, 2022).

Diversity: socio-economic complexities within communities

The *diversity* community dimension encompasses the socio-economic complexities that can influence CFA behavior. For this dimension, contextual factors relating to all domains of the TPB were identified, indicating the multifactorial barriers facing communities.

Financial barriers can limit the ability to participate in FA training, for low-income groups, resulting in low perceived behavioral control to perform FA (Dobbie et al., 2020). Several strategies can be implemented to improve uptake and engagement. Subsidizing training costs or adapting training initiatives to reduce expenses without compromising quality, such as using peer trainers or online content can make FA training more accessible (Plant & Taylor, 2013). Two studies on targeted FA burns education for parents and caregivers, delivered via a social media campaign and a free mobile app, respectively, reported success in transcending socioeconomic, racial, and ethnic boundaries through such low-cost dissemination methods (Burgess et al., 2018; Cowley et al., 2021). Economically deprived or socially marginalized groups can also experience low confidence and self-efficacy in performing FA (Dobbie et al., 2020; Miller & Pellegrino, 2018). Tailored FA training can enhance perceived self-worth and behavioral control by recognizing and addressing the specific psychosocial barriers faced by diverse groups, while also providing various ways for people of different abilities to help (Dobbie et al., 2020). For older adults, shorter duration and needs-based FA training can be beneficial (Dolenc et al., 2023).

Stigmatizing beliefs associated with certain clinical conditions, socially marginalized groups, such as injection-drug users, or gender- and age-related beliefs about performing CPR on women or older people, can limit bystander intervention in emergencies. Educational campaigns that address normative beliefs about these specific groups or conditions can foster community compassion and promote understanding and empathy within the community, ultimately improving bystander intervention rates (Beletsky et al., 2012). Delivering interventions in partnership with communities is important for building trust and promoting participation. Engaging with the community to understand their needs and incorporating their input into the design and delivery

of FA training can empower communities and lead to more effective and sustainable outcomes (Andrade et al., 2019; Dobbie et al., 2020; Tatebe et al., 2019). Attitudes towards what constitutes an effective CFA response can be influenced by misinformation or cultural practices, potentially leading to sub-optimal outcomes. Tailored educational initiatives that include 'myth-busting' and are adapted to the community can shift attitudes and improve health outcomes (Baker et al., 2015).

Social ties: communities based on social connections

Communities with a 'social ties' dimension included school children, adolescents, and families. FA training leveraging natural empathy within communities through group FA training, interactive sessions, peer-trainers, and wider community-building initiatives can help strengthen existing pro-social attitudes, leading to enhanced community connectedness and a greater sense of community responsibility.

For families, CPR training initiatives that highlight the likelihood of needing to perform CPR on a spouse or loved one, compared to a stranger, can significantly enhance engagement with FA training and retention of skills (Dolenc et al., 2022). Personal relevance makes the training more impactful, as participants can directly relate to the potential scenarios they might face. In schools, FA training which focuses on the importance of looking out for one another can foster a sense of duty and care among peers (Bollig et al., 2011; Reveruzzi et al., 2016). For example, a school-based FA training program in Australia aimed at enhancing a wider sense of school connectedness reported positive changes in social responsibility and empathetic behavior, alongside the acquisition of FA knowledge and skills (Buckley et al., 2021; Reveruzzi et al., 2020). Repeated FA training from a young age may help school children develop a growing sense of 'moral responsibility' through normalization of a culture of helping others (Buckley et al., 2021; Calicchia et al., 2016; Pivac et al., 2020).

Peer trainers delivering FA training, such as teachers, can also promote a sense of community responsibility (Buckley et al., 2021; Carruth et al., 2010; Louis et al., 2022; Tse et al., 2023) as role models can demonstrate the importance of FA skills and encourage others to adopt similar attitudes, while their influence can help create a culture of mutual support and readiness to assist in emergencies within the community. For groups not based on social connections, group FA training can encourage pro-social attitudes and responsibility (Wahyuni et al., 2020). One study reported that training together as a community group enhanced social connectedness, as participants recognized the value they could offer to others and receive in return (White & McNulty, 2011).

Joint action: communities of action

The CMOs associated with communities of 'joint action' address normative and behavioral beliefs that hinder CFA responses. These findings are most relevant to communities without underlying social ties or shared interests.

Fears and uncertainty regarding legal liability and making incorrect decisions or causing harm as a bystander have been identified as significant barriers to performing FA. Including information on protective legislation, such as Good Samaritan laws, in FA training can alleviate these concerns and establish subjective norms, thereby improving willingness and intention to perform FA (Muise et al., 2019; Wahyuni et al., 2020). Training initiatives that address the 'diffusion of responsibility' phenomenon can help foster a sense of social responsibility in community groups. This phenomenon occurs when individuals in a group are less likely to take action because they assume others will. By showcasing examples where this diffusion has led to negative outcomes, training can highlight the importance of individual and collective accountability (Regard et al., 2020). A review of schools-based FA training recommended that children's concerns, including about helping strangers or causing harm, should be addressed to improve behavioral intention (De Buck et al., 2015). Group CPR training with hands-on, interactive components can reduce social barriers around community-based emergency responses, such as the reluctance to touch strangers (White & McNulty, 2011).

DISCUSSION

Using MacQueen's five core community dimensions (2001), we examined how CFA interventions function across different community groups and settings. The Theory of Planned Behavior (TPB) provided an analytical framework to investigate how intervention components, or resources, could modify attitudes, perceived behavioral control, and subjective norms that influence CFA responses (Ajzen, 1991) (Figure 1). Overall, we theorized that specifically targeting and tailoring FA training and education to address the unique barriers and enablers present in different community contexts can improve CFA responses.

Enhancing community enablers

Social connectedness and a sense of community efficacy are powerful enablers that can foster a willingness to intervene in emergencies; this may be easiest to enhance in existing social groups. Training programs that emphasize the communal benefits of FA skills and foster a sense of shared responsibility can enhance these feelings of connectedness and efficacy. School-based programs that encourage students to teach their family members can create a multiplier effect, spreading FA knowledge throughout the community. Furthermore, using relatable scenarios and local data in training resources can make the content more engaging and resonate with communities based on place or shared interests, reinforcing their intention to intervene. Tailored FA training can boost a sense of belonging and mutual support in communities, leading to greater confidence and readiness to apply FA skills. This concurs with wider literature on social identity and community resilience, which has found that individuals with a strong sense of community are more likely to engage in helping behavior (Omoto & Packard, 2016) and strengthening social ties boosts self- and collective efficacy (Ohmer, 2007; Penner et al., 2005).

Tackling community barriers

Our findings highlighted that barriers to effective CFA responses are often more pronounced in disparate communities lacking social cohesion or facing socioeconomic disadvantages. FA training in schools targeted to specific geographical areas, or providing accessible FA training opportunities, to communities with low training prevalence and high emergency service use can improve equitable access to life-saving skills, with potentially beneficial impact on health outcomes and the health system. Low perceived self-efficacy in performing FA can be addressed through training that empowers communities. Attitudes about which conditions are candidates for CFA intervention and misperceptions about appropriate care can be improved through targeted educational campaigns and tailored training initiatives. Initiatives that identify and address the normative beliefs held by different communities which may be hindering CFA responses can improve the intention to perform FA. Finally, building trust through consistent, culturally sensitive engagement with FA training providers can encourage greater participation in FA training.

Limitations

The findings of this rapid realist review align with the broader literature on social identity theory and community resilience. The theories presented here should be regarded as indicative of the nature and range of contexts and mechanisms that underpin effective CFA interventions.

Relationships or proposed mechanisms with outcomes were formulated through a process of retroductive reasoning and their causal association has not undergone empirical testing. To test the validity of the causal relationships identified between mechanisms and outcomes in CFA interventions, future research could employ validated survey tools that measure FA intention in alignment with TPB domains (Miller & Pellegrino, 2018). Most of the included studies concentrated on CFA training initiatives and evaluated immediate outputs, such as knowledge, skills, confidence, and willingness, without conducting follow-up studies to assess actual FA behavior in emergencies or associated longer-term system outcomes. Only a limited number of studies assessed health outcomes related to CFA responses. Furthermore, the synthesis was limited to English-language studies deemed relevant to the UK context. Although this flexible but non-systematic approach enhanced the depth

of insight, it may have limited the ability to generalize findings to other settings.

CONCLUSION

This review, guided by MacQueen's five community dimensions and the Theory of Planned Behavior, highlights how tailored and targeted FA training and educational interventions that address unique barriers and leverage community-specific enablers can enhance CFA responses. Such community-level strategies are intended to complement the learning of FA skills and knowledge, enhancing the overall effectiveness of these programs by improving the intention of community members to perform FA. Future research should investigate the causal links between community-focused interventions and long-term outcomes to better understand how to effectively and sustainably to embed CFA into the chain of survival.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Supplementary Material.** Supplementary Figure 1, Supplementary Tables 1 and 2. DOI: https://doi.org/10.25894/ijfae.2695.s1

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LS and MB hold positions at St John Ambulance (Impact Lead and Associate Medical Director, respectively). Their input was limited to study design and scope and article selection.

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