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Closing the Gap: Addressing Racial Bias in Bystander CPR Administration

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Abstract

Bystander cardiopulmonary resuscitation (BCPR) significantly improves survival rates for out-of-hospital cardiac arrest (OHCA), yet racial disparities persist. Black and Hispanic individuals are markedly less likely to receive BCPR than White individuals, contributing to preventable deaths and inequities in survival outcomes. Structural factors such as educational barriers, implicit bias, and systemic racism contribute to these disparities. This article examines key contributors to racial disparities in BCPR administration and presents targeted, evidence-based solutions. Educational barriers, including limited CPR training access in historically marginalized communities, low health literacy, and language differences, impede knowledge acquisition and response readiness. Implicit bias among bystanders and first responders influences CPR administration, reinforcing disparities. To address these issues, a multifaceted approach is needed, emphasizing community engagement, culturally responsive training, bias awareness for emergency responders, and policy reforms. Strategies include subsidizing CPR training in underserved communities, developing multilingual and culturally tailored educational materials, integrating CPR instruction into school curricula, and incorporating bias awareness training into first responder certification programs. Additionally, policy interventions should ensure equitable resource allocation to support CPR training and emergency response infrastructure in high-risk communities. Reducing racial disparities in BCPR requires coordinated efforts from policymakers, public health officials, and community stakeholders. Implementing targeted interventions can improve CPR accessibility, enhance response equity, and ultimately reduce preventable mortality among historically disadvantaged populations.

Keywords

racism, cardiopulmonary resuscitation, health inequities, education, community participation

Highlight

- Despite the lifesaving potential of bystander CPR, Black and Hispanic individuals remain significantly less likely to receive it during cardiac emergencies. This article identifies structural barriers, such as unequal access to CPR training, language and literacy gaps, and implicit bias, that contribute to these disparities. It proposes evidence-based, culturally responsive solutions to improve CPR readiness and reduce preventable deaths in historically marginalized communities.

Introduction

Every year, 356 000 people in the United States experience an Out-of-Hospital Cardiac Arrest (OHCA), and at least 60% die before reaching the hospital.[1] In cases of OHCA, bystander cardiopulmonary resuscitation (BCPR) is essential for survival, where immediate administration of CPR can increase the chances of survival by 2 to 3 times.[2] Despite the life-saving potential of BCPR, racial disparities persist: Black and Hispanic individuals are significantly less likely to receive CPR compared to their White counterparts, leading to preventable deaths and inequities in survival rates.[3] This commentary examines the intersectional factors contributing to racial and ethnic disparities in BCPR administration and proposes evidence-based solutions to mitigate them.

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Gaps in BCPR Administration

Recent large population-based studies of out-of-hospital cardiac arrests found that Black and Hispanic individuals were less likely to receive BCPR at home compared to White individuals.[4,5] The odds drop even further in public settings, where Black and Hispanic individuals have 37% lower odds of receiving BCPR.[6] This disparity exists even in majority Black and Hispanic communities (defined as more than 80% Black or Hispanic residents), where a White person experiencing sudden cardiac arrest (SCA) is still more likely to receive CPR than a Black or Hispanic individual.[5] These disparities persist regardless of the community's racial composition or the availability of bystanders, highlighting a systemic issue that requires urgent attention.

Intersectionality in BCPR Disparities

While disparities in BCPR are often attributed to race, ethnic, and gender differences, the interplay of these differences—known as intersectionality—reveals deeper and concerning compounded biases. Race, ethnicity, and racism do not exist in isolation from sexism and other social determinants of health. Intersectionality highlights increased vulnerability leading to health inequities. A retrospective study using Cardiac Arrest Registry to Enhance Survival (CARES) reported that women who had public OHCA in predominantly Black neighborhoods had a 13% lower odds of receiving BCPR (adjusted OR, 0.87 [95% CI, 0.76-0.98]), and women with OHCA in predominantly Hispanic neighborhoods had a 17% lower odds of receiving BCPR (adjusted OR, 0.83 [95% CI, 0.73-0.96]).[7] To study the interplay of different factors, a scoping review categorized studies into 5 themes: gender, socio-economic status, race and ethnicity, language, and perceptions.[8] Black and Hispanic women were less likely to receive BCPR. Inability to be proficient in English and lower socio-economic status were predictors of lack of receiving CPR training.[8]

Contributing Factors

Educational Barriers

Educational barriers, such as literacy challenges, language differences, cultural barriers, and physiological obstacles, play a significant role in disparities regarding BCPR administration.[9] A notable example is the lack of education and awareness about SCA, the need for timely CPR, and the use of Automated External Defibrillators (AEDs) among Black and Hispanic individuals, contributing to their lower CPR rates.[10,11] Black and Hispanic populations often reside in historically redlined neighborhoods, where access to BCPR training is limited due to generational racism and socioeconomic barriers.[12]

Furthermore, Black and Hispanic populations may have lower average incomes and live in lower-income areas with a lack of investment in these communities.[3] Although income is an important consideration, studies show that education level, rather than income, is a reliable predictor of CPR training.[13,14] Financial costs associated with CPR training further exacerbate this issue, particularly in low-income communities.[14] Low health literacy, language barriers, and concerns regarding immigration status also hinder CPR education and awareness, particularly within the Latino community, where a significant portion of the population is unfamiliar with CPR or AEDs.[15,16] The poor quality of Spanish-language CPR education resources compounds these disparities, further limiting access to life-saving knowledge and skills.[17]

Impact of Bias and Structural Racism

Implicit and explicit biases among healthcare professionals, first responders, and bystanders also contribute to disparities in CPR administration.[18,19] Implicit biases are unconscious associations that lead to automatic, unintentional reactions toward certain groups, often without the person's awareness.[20] These biases contribute to lower administration of CPR to underrepresented racial and ethnic groups. For instance, racial biases among first responders have been documented, with some assuming that Black patients are less likely to require immediate medical intervention or are malingering their symptoms.[21] Such biases contribute to the underestimation of the severity of Black patients' conditions and lower rates of CPR administration.[21] Additionally, emergency response activation faces unique barriers in certain communities, including fears of immigration checks, distrust of authorities, safety concerns in high-crime areas, cultural norms restricting opposite-sex contact, and worries about legal repercussions.[15,22-24] These factors collectively contribute to a systemic issue where racial and ethnic minorities are less likely to receive timely and appropriate CPR.

Potential Solutions

Addressing educational barriers and implicit biases requires multifaceted interventions tailored to community-specific needs. The inverse equity hypothesis suggests newly introduced public health interventions are initially adopted by wealthier segments of the population, who typically have greater access to information and resources. This early adoption can lead to an increase in health disparities, as lower-income groups may not benefit until the intervention becomes more widespread. Over time, as coverage expands, these disparities may decrease.[25] To effectively address disparities in bystander CPR administration, we propose a multifaceted approach focusing on community engagement, culturally-sensitive training, bias training, and CPR policy reforms (Figure 1). These strategies aim to reduce structural barriers, improve accessibility to CPR education, and ensure equitable emergency response.

Community Engagement to Expand Early-Intervention CPR Training

To address educational barriers, we recommend expanding early-intervention CPR training within underserved

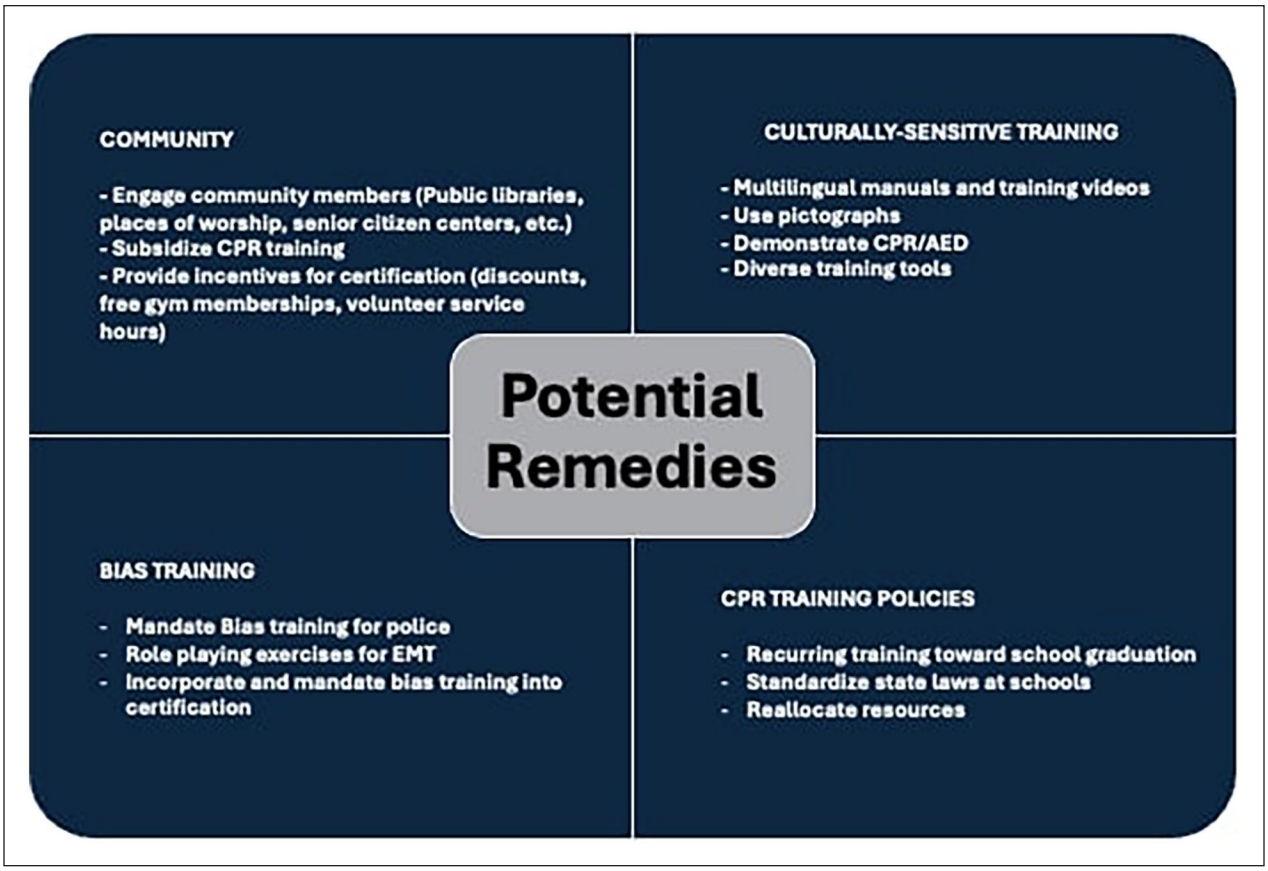

Figure 1. Proposed remedies for reducing racial disparities in bystander CPR.

communities that would require resource investment by funding sources and tailoring the training to the language requirements of local communities. This intervention would serve communities where CPR training is sparse, especially rural communities.

Engaging diverse community stakeholders, organizations, and institutions in implementing CPR training programs can effectively mitigate racial bias.[22] For example, Chicago and Seattle's Fire Departments partnered with local schools, churches, and community centers to provide free CPR training.[26,27] A key component of these initiatives was to target Black, Hispanic, and immigrant communities and providing CPR training in multiple languages to overcome the language bias. Moreover, the fire departments utilized partnerships with faith based organizations to overcome trust barriers in underrepresented communities. By also integrating CPR training into high school curricula, younger generations were trained to assist in emergencies and also be on the forefront of CPR training within their communities. Survival rates in King County, Seattle increased by 27% in Black and Hispanic neighborhoods and BCPR rates doubled in low income neighborhoods within 5 years.[27]

Successful community interventions often focus on engaging motivated lay leaders, choosing accessible community-based locations for training, and providing incentives such as certification discounts or community service credits. Subsidizing CPR training, particularly in underserved communities, can enhance accessibility and encourage participation.[28] Early-intervention CPR training helps universalize CPR education, allows participants to practice diverse scenarios, and increases familiarity among people from various racial and ethnic backgrounds. This approach lays the groundwork for a future rooted in empathy and understanding.

Promote Multilingual and Culturally Sensitive Training Materials

To make CPR training more accessible, we recommend developing multilingual and culturally sensitive training materials. CPR training manuals, guides, and instructional videos should be available in multiple languages to cater to diverse populations. Additionally, multilingual instructions and visual communication are essential in preparing for emergencies involving non-English speakers.[29]

CPR training should include culturally relevant scenarios representing a range of ethnicities, ages, and genders. For example, culturally representative training tools such as the Brayden OBI manikin realistically represent a dark-skinned adult male and feature anatomically correct airways and red LED lights that simulate blood flow from the chest to the brain during compressions, offering both clinical realism and immediate visual feedback on CPR technique. These manikins were

specifically designed to improve cardiac arrest outcomes in diverse communities by enhancing learner engagement and promoting inclusivity in training environments.[30] Promoting culturally sensitive CPR training fosters greater understanding and respect for individuals from diverse backgrounds and reduces disparities in CPR administration. Initiatives that address cultural barriers to response have shown to improve willingness to perform life-saving resuscitation measures in ethnically diverse communities.[31]

Recommend Voluntary Bias Training for First Responders and Healthcare Professionals

Bias training for healthcare professionals has gained attention in recent years. However, evidence shows that directly reducing implicit bias through training is challenging.[32] Instead, we recommend training focused on increasing provider awareness of bias and reducing the effects of provider bias in practice. Effective bias training includes emotional regulation, forming partnerships, and understanding identity.[33-35] Trainings should be tailored to address the specific issues faced in each local setting and updated as further evidence emerges.

Integrate CPR Training Into School Curricula, Promote Resources, and Mandate Policies

Every year, 23 000 children in the U.S. are affected by OHCA, with a 10% survival rate.[36] Given that 25% of the U.S. population over the age of 3 is enrolled in school year-round, educational institutions are ideal venues to promote CPR training. Recently the HEARTS Act (H.R. 6829), a bipartisan bill, establishing a federal grant program to fund AED purchases, requires schools to offer CPR training for students and staff, promoting awareness of high-risk cardiac conditions like cardiomyopathy, and mandating comprehensive cardiac emergency response plans in schools.[37]

School-based CPR training interventions have been shown to effectively promote knowledge and skills retention among adolescents.[38] Despite barriers such as cost and time constraints, strategic planning can address these challenges. The U.S. should follow the example of countries like the United Kingdom, where schools are mandated to have AEDs.[39] Standardized policies and increased funding would significantly benefit underserved communities, promoting equitable emergency response.

Conclusion

We provided a comprehensive overview of potential contributing factors to disparities in BCPR administration and multiple potential solutions. We acknowledge that not all forms of bias and inequalities are created equal and this complex topic warrants much deeper exploration. Additionally, there are CPR models and solutions that currently exist that do not significantly improve outcomes, and thus we advocate for solutions tailored to community-specific needs rather than a broad, "one-size-fits-all" approach. We also caution against oversimplifications or assumptions that can obscure the nuances of this complex topic and instead emphasize the importance of community engagement strategies tailored to each community's unique needs.

The solutions outlined—including expanding CPR training by engaging community stakeholders, incorporating culturally sensitive training materials, suggesting bias training for medical professionals, and integrating CPR training into schools—can play a significant role in reducing these disparities. Increased funding for CPR-focused educational initiatives is needed to establish comprehensive training programs in rural and underserved communities. We advocate for location-based efforts involving diverse stakeholders tailored to the unique needs of each community.

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Ethical Considerations

This article that did not require approval by an IRB because no data were collected or analyzed.

Author Contributions

KT: Conceptualization, Investigation, Writing—Original draft preparation, Reviewing and Editing. EL: Conceptualization, Investigation, Writing—Reviewing and Editing. AM: Conceptualization, Investigation, Writing- Reviewing and Editing. JJ: Conceptualization, Investigation, Writing—Reviewing and Editing. JPS: Supervision, Investigation, Writing—Reviewing and Editing.

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