

Island communities and disaster resilience: Applying the EnRiCH community resilience framework

By: [Audrey Snyder](#), Stephanie Matthew, Nancy Leahy, Raiden Gaul, Tiffany Lee Hood, Kyler Hijmans, and Gwyneth Milbrath

This is the peer reviewed version of the following article:

Snyder, A., Matthew, S., Leahy, N., Gaul, R., Hood, T. L., Hijmans, K., & Milbrath, G. (2022). Island communities and disaster resilience: Applying the EnRiCH community resilience framework. *Public Health Nursing*, 39, 62–70. <https://doi.org/10.1111/phn.13007>

which has been published in final form at <https://doi.org/10.1111/phn.13007>. This article may be used for non-commercial purposes in accordance with [Wiley Terms and Conditions for Use of Self-Archived Versions](#). This article may not be enhanced, enriched or otherwise transformed into a derivative work, without express permission from Wiley or by statutory rights under applicable legislation. Copyright notices must not be removed, obscured or modified. The article must be linked to Wiley's version of record on Wiley Online Library and any embedding, framing or otherwise making available the article or pages thereof by third parties from platforms, services and websites other than Wiley Online Library must be prohibited.

Abstract:

Objective: To explore the beliefs, attitudes, and perspectives of community resilience in St. Kitts and Nevis. **Design:** Qualitative Interpretive Phenomenological Analysis using the *EnRiCH Community Resilience Framework for High-Risk Populations (EnRiCH Framework)* to identify factors that enhance or create barriers to community resilience to disasters in St. Kitts and Nevis. **Sample:** Twenty-one key informants and 23 community informants provided insight into the history of disasters. **Results:** Unique strengths and barriers that significantly influenced this high-risk population's adaptive capacity were identified. A discrepancy between the way disaster preparedness was perceived by government officials and the local population was noted. Cultural factors promoted connectedness and communication and created barriers to empowerment and collaboration. Innovative strategies were suggested that could enhance upstream leadership, downstream management, and resource management during disasters. **Conclusions:** Island communities represent a unique opportunity to examine risk reduction and vulnerability within the context of community and societal characteristics. This research addresses a significant gap in the literature on interventions that utilize a strengths-based approach to building adaptive capacity and resilience to disasters among at-risk populations. The *EnRiCH Framework* can be used to develop an approach to strengthen adaptive capacity and improve resilience to disasters.

Keywords: community based participatory research | community resilience | disaster | enrich framework | high-risk populations

Article:

1 INTRODUCTION

Island communities represent a unique opportunity to examine both disaster risk reduction and vulnerability within the context of cultural and societal characteristics. A recent report by the World Bank (2017) highlights the fragility of Small Island Developing States (SIDS), including those located in the Caribbean, whose size, topography, and geographic isolation predispose them to harsh impacts from disasters. For these nations, efficient and collaborative leadership is essential and plays an important role in both disaster management (DM) and community resilience. While many individual communities exist with strong family and community networks, the inconsistent use of political power and resources have left some residents wary of government intervention (Kelman, 2017).

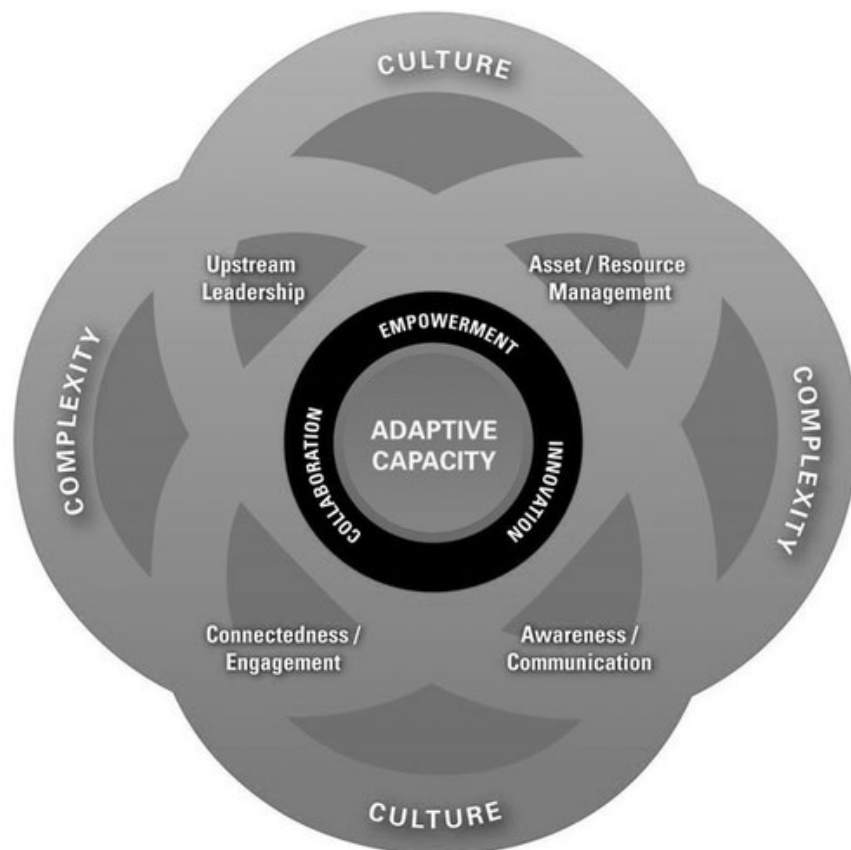


FIGURE 1. Adaptive capacity (O'Sullivan et al., 2014)

Recent efforts have attempted to overcome this resistance with strategies to elicit community input and enhance adaptive capacity for public health. The *EnRiCH Community Resilience Framework for High-Risk Populations (EnRiCH Framework)* (O'Sullivan et al., 2014) (Figure 1) was created to identify factors and strategies to increase resilience to disasters among high-risk populations. According to O'Sullivan et al. (2014), community resilience is defined as the ability of social units to mitigate hazards, and carry out recovery activities effectively to minimize mortality, morbidity, destruction of property, and social disruption when disasters occur. Community resilience is linked to adaptive capacity during and after adversity. Community adaptation is evidenced by population mental health and quality of life. This paper describes the

factors that enhance adaptive capacity or create barriers to community resilience to disasters in St. Kitts and Nevis (SKN).

1.1 Community description

The federation of SKN are two volcanic islands in the eastern Caribbean. Most residents are of African descent. Approximately 55,000 people live on the islands with a third living in urban centers (Riches & Stalker, 2016). Historically cotton and then sugar plantations were the main source of employment. With the sugar processing plant closed, the major source of income is tourism with 110,000 people vacationing on the islands annually with an additional 1,000,000 visitors from cruise ships each year (Riches & Stalker, 2016). Each island is a community with the islands further divided into parishes, nine on St. Kitts and five on Nevis (P.A.H.O., n.d.). The most common natural hazards facing the islands are hurricanes and earthquakes; however, this area is also subject to volcanic activity, tsunamis, storm surge, torrential rains, and flooding (Gibbs, 2001). The National Emergency Management Agency (NEMA) is responsible for St. Kitts and Nevis disaster mitigation, management and response (Figure 2). Nevis Disaster Management Department (NDMD) collaborates with the NEMA National Disaster Coordinator (Figure 3).

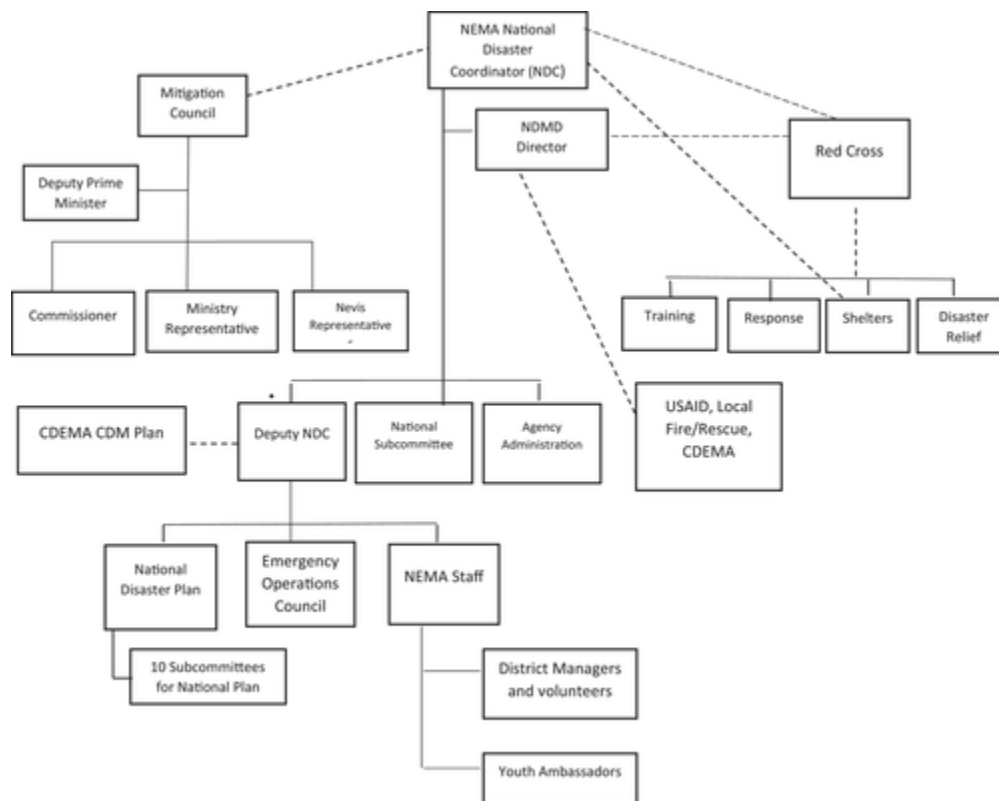


FIGURE 2. National emergency management agency

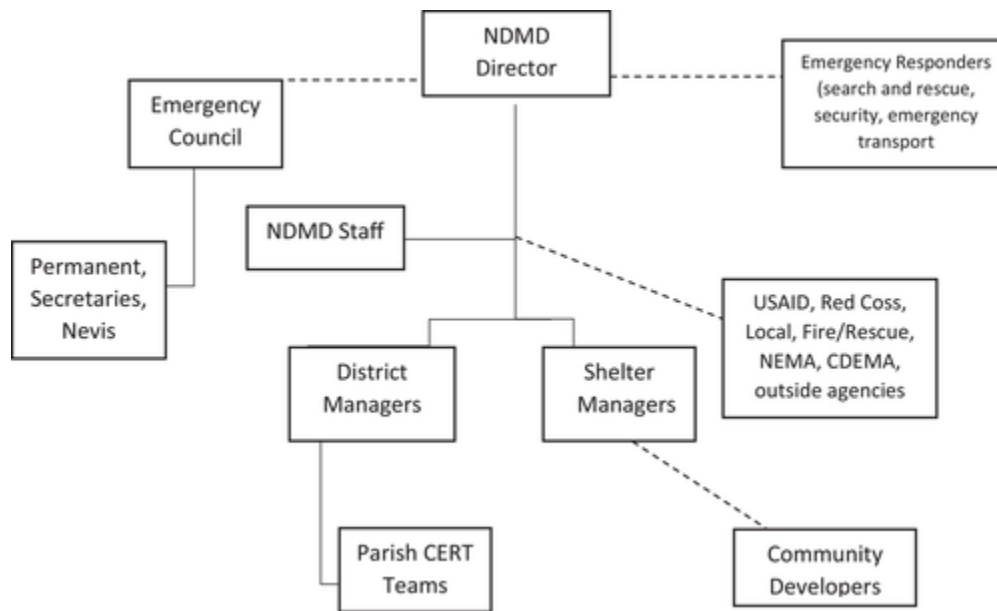


FIGURE 3. Nevis disaster management department

1.2 Background

This study used the *EnRich Framework*, adapted from a theory of resilience developed by Norris et al. (2008) to guide the analysis and contextualize the results of this study. Resilience encompasses the concepts of stress, adaptation, wellness, and resource allocation (Norris et al., 2008). The *EnRiCH Framework* was designed to promote a community's adaptive capacity to disasters by using an integrated upstream-downstream approach facilitating partnerships between academic researchers, government organizations, and community stakeholders (Figure 4). This approach promotes innovative solutions to complex social issues that impact high-risk populations' resilience and the ability to cope with disasters, focusing on assets that build resilience rather than deficits to disaster preparedness (O'Sullivan et al., 2014).

Most published research has focused on hazard details rather than the needs or perspectives of community members. Disaster management (DM) often utilized a top-down approach that overlooked the psychosocial factors of high-risk populations. Bakema et al. (2019) stated there is a need for data on individual experiences and needs during and after disasters to inform evidence-based DM policy. Baudoin et al. (2016) studied the challenges of engaging vulnerable community members at the grassroots level in hazard risk detection and reduction. The priorities and actions of government organizations and community level initiatives in disasters are often mismatched, leading to fragmented, ineffective disaster response and mitigation (Bakema et al., 2019). Oteng-Ababio (2013) proposed that culturally sensitive qualitative research with awareness of bias and power differentials on how to build disaster resilience among high-risk populations is needed.

Community based participatory research (CBPR) is increasingly being emphasized in the literature as a critical component of sustainable DM strategies. Mercer et al. (2008) found CBPR to be an effective method to engage marginalized groups in disaster mitigation and response.

Valuing community input facilitates collaboration between government programs and high-risk populations.

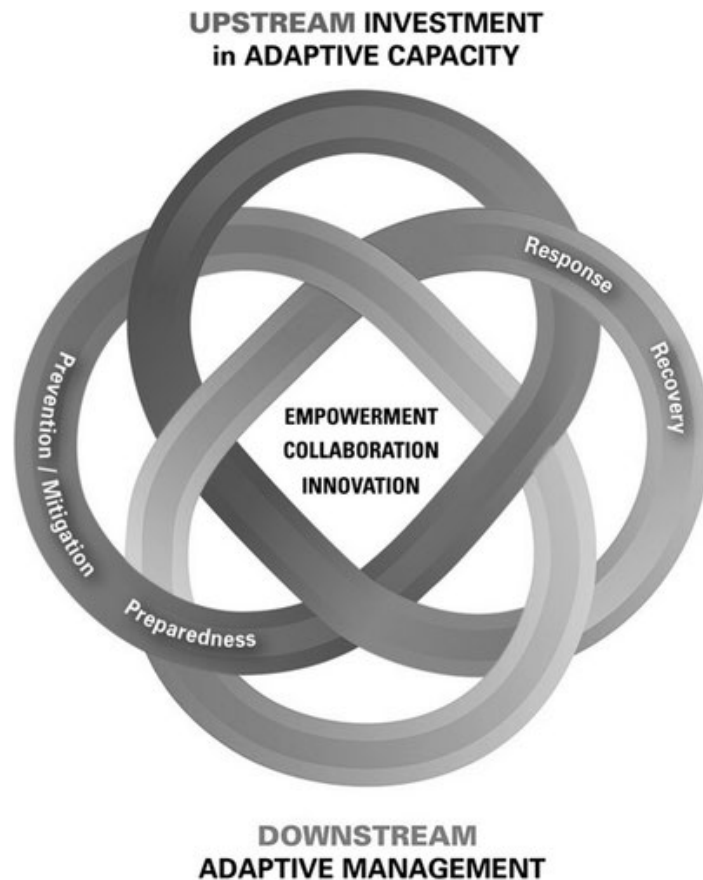


FIGURE 4. Generalized map of the development of adaptive capacity (O'Sullivan et al., 2014)

A review of the literature identified a significant gap in qualitative research on CBPR on disaster mitigation and response. Several studies identified a significant gap in qualitative CBPR on initiatives to enhance resilience for high-risk groups. This study addresses gaps in the literature by investigating the community's perceptions of disaster risk from both community members and national leadership in SKN using a qualitative approach. The *EnRiCH Framework* can be used to analyze the adaptive capacity and resilience to disasters among at-risk populations.

2 METHODS

2.1 Design

This study was approved by the the University of Illinois Chicago and the University of Northern Colorado Institutional Review Boards, and the government of SKN. This analysis is part of a larger research study on community disaster resilience (Milbrath et al., 2019).

Qualitative Interpretive Phenomenological Analysis (IPA) (Smith, 2004) was used to explore the participants' lived experiences and the meanings they ascribe to them to gain an understanding of the strengths and barriers to disaster preparedness and response described in the *EnRiCH*

Framework. Interpretive Phenomenological Analysis (IPA) is a qualitative approach designed to elicit detailed accounts of participants' lived experiences and understand the meaning participants assign to their experiences (Smith, 2004).

The *EnRich Framework* aligned with the major themes identified in the data. The researchers organized these themes into drivers and strategies that either helped promote resilience or created barriers to the community's capacity to adapt to disasters. Findings from this study may assist in the development of strategies to more effectively engage the local community to improve disaster mitigation and response.

2.2 Sample

Key informants (KI) were recruited by the local directors of DM due to their intimate knowledge and expertise of St. Kitts (9) and Nevis (12). Key informants represented a variety of facets critical to DM including health care, education, tourism, emergency services, community disaster response, and DM. Community informants (CI) of St. Kitts (14) and Nevis (10) were recruited from each parish and district by both purposive and convenience sampling. Elder members of the community were referred to the research team for their knowledge of historical disasters and their effect on the community. The remaining CI were invited to participate after completing a survey related to disaster knowledge and perspectives that is described elsewhere (Drzewiecki et al., 2020).

2.3 Analytic strategy

Key informants were interviewed using a semi-structured interview guide about their role in disaster risk reduction. All participants provided verbal consent to be interviewed and recorded. Recordings were transcribed verbatim by members of the research team. Three participants declined to be recorded and this data was retrieved from detailed notes of the interviews.

The research team met regularly via videoconferencing to conduct an in-depth analysis of the transcripts. A content analysis method described by Fonteyn et al. (2008) was used. The *EnRiCH Framework* served as an organizational structure for categorizing data. Discrepancies in data interpretation were discussed by the team until consensus was reached for each transcript and themes identified. This process was repeated until no new themes were identified and themes were sufficiently analyzed with respect to the *EnRiCH Framework*.

Measures to ensure trustworthiness were employed with each phase of data collection and analysis. Careful planning prior to data collection ensured that multiple perspectives would be represented. A standard guide was used to ensure consistency in the interview process. Internal validity was supported through meticulous data collection methods. Detailed field notes were taken to preserve observations about cultural context. The team met frequently to reflect upon their perspectives as researchers and cultural outsiders, and how their bias might influence their frame of reference, data analysis, and interpretation.

3 RESULTS

3.1 Empowerment

Within the *EnRiCH Framework*, empowerment is considered one of the core drivers of adaptive capacity. Empowerment is defined within the model as the “power given to activate assets and opportunities to participate” (Généreux et al., 2018, p. 265) and is promoted by both government and individual action. The role of government includes the essential tasks of providing guidance and implementation for each strategic area of intervention. The role of the individual is to be empowered through knowledge and preparation. When both roles are fulfilled, adaptive capacity is enhanced.

KI expressed the importance of encouraging the population to empower themselves to prepare for disasters. “If everybody in the community knows what to do, it will help the recovery effort...if we can empower the community, we are actually empowering ourselves” (KI15). This perspective was echoed by CI who stated it was important for them to be self-sufficient. While limited resources presented barriers to empowerment, some residents used previous disaster experiences to make decisions. “Well, since Hugo, in 1989, I think my thinking towards hurricanes and disasters is totally different. I always try to get myself prepared” (CI6). “Going through these hurricanes, most people have learned that you must...do something for yourself. You just can't wait on the government” (CI5). Others voiced concern over the lack of urgency or accountability for personal preparation. “They don't really pay too much attention to disaster preparedness... until a storm is coming and then they start thinking about it” (KI12).

3.2 Collaboration

In DM collaboration between the islands and with surrounding Caribbean nations that share limited resources is necessary. “It is important because we have to share ideas. And if there's something that we are not versed in, then...they at least can give us advice as to how to deal with a particular situation” (K19). Each island has annual Emergency Care and Treatment training with the Pan-American Health Organization. During disasters, the multiple branches of the government have pre-assigned hierarchies for communications and tasks, coordinated by DM personnel. Residents are informed of crises as soon as possible, and relevant disaster response plans are implemented. Hotels receive information from DM and communicate it to patrons, giving the option to leave the island early if possible.

Several KI mentioned poor attendance at disaster training. “We coordinate with the people who have the technical know-how and the training and the expertise to be able to do that... But when we had these campaigns around the island, persons did not really turn up” (KI21). According to one KI “We ... used to meet once a month, then some persons weren't available” (KI12).

3.3 Innovation

There are several innovative disaster risk reduction practices including year-round strategic messaging, working with the private sector, and the addition of tsunami drills. “NEMA [National Emergency Management Agency] used to be only active when hurricane season hit and now it's an active body open year-round. We've also implemented programs into the schools” (KI18).

The islands are also forced to adapt and innovate to respond to rapid climate change, including frequently updating their disaster plans. The disaster plan is in draft form. “The reason being is that it was revised some time back by CDEMA [Caribbean Disaster Emergency Management Agency], and...climate change has become a bigger thing” (KI15).

With limited manpower people fill multiple roles through cross-training, “We have persons who at a flip of a switch can change their roles to do assistance, do damage assessment, do whatever is necessary to ensure that we can pull through” (KI2). NEMA collaborates with both the public and private sector in managing disaster units (Figure 2).

Tsunami preparedness is relatively new. “We went to Thailand to study the impact on the tourism sector following the tsunami there” (KI11). Tsunami drills are held “twice a year...with the Caribe Wave Exercise, which is a seismic tsunami-related exercise to test different mechanisms, and this year we ...test[ed] evacuation times, use of emergency response plans, traffic control, if persons knew where their assembly points were, and our messaging” (KI21).

3.4 Upstream oriented leadership

The term upstream-oriented leadership is used to describe the actions and initiatives that governing bodies and response organizations use to strategically enhance adaptive capacity, such as policy initiatives and asset management. The residents identified complex issues related to accountability, competing priorities, fiscal restraints, broad-based concerns of resource equity, and perceived limitations over the likelihood or control of an event. Upstream investment in adaptive capacity includes the traditional phases of DM (O'Sullivan et al., 2014).

The need for sufficient resources, including the allocation of both human and fiscal assets was evident. Fiscal planning for disasters can be challenging when funding is limited and multiple competing priorities exist. Participants expressed the need to fund additional positions, required training, and legislative support for DM. “Most times to get proper training of personnel a person would have to go overseas. That would incur some amount of finance.” (KI9). Many felt that DM was not a top priority for lawmakers. Moreover, several voiced concerns related to recruiting, training, and retaining qualified volunteers. “I'm not satisfied that enough people who are trained will follow through. Kind of common; you train 10 a day, you get 3 or 4 that really stick with it” (KI4).

Some residents believed that current disaster plans were sufficient, and that preparedness should be based on self-reliance and individual responsibility: “Less government means more reliance on yourself, your community. You have to find the right balance” (KI13). Other residents had less confidence in the disaster plan. “Personally, I think more efforts need to be put into DM from a governmental standpoint” (KI4). Many study participants reported contrasting views on the efficacy of the current systems and the desire for more substantial support for preparedness. A lack of equal access to resources and low confidence in the system were also expressed. “Government provided some provisions; however, it was rationed and depended on when you got there. They would run out of supplies” (CI3). An individual's perceived susceptibility to a hazard contributed to complacency and unpreparedness.

Downstream response during and after an adverse event is considered an integrated process that extends from upstream leadership. Policy and preparatory changes to disaster plans are borne out of previous disaster experiences and demonstrate the cyclic nature of an adaptive response to manage resources effectively. Public perception of government planning and response were mixed and were sometimes in contrast to the beliefs of upstream leadership. This discrepancy may create barriers to improved adaptive capacity by impacting the core drivers of the *EnRiCH Framework*.

3.5 Asset/Resource management

Asset and Resource Management occurs at the governmental and individual levels. Hospitals and community clinics on both islands must have response plans targeting specific disasters as their staff may have limited ability to get to the facility during a disaster. A tsunami would likely flood the hospital on Nevis requiring patients and staff to evacuate to schools and hotels at higher elevations (K19). Hotels also have very specific evacuation plans for transitioning guests off the island or to shelters. Assessment of every historical location on the islands occurs quarterly. “We’re not just concerned about hurricanes. If an earthquake or any disaster happens, we should be able to say to any funding agency... this is what it looked like 3 months ago, can we get it repaired?” (KI11). After an event, as soon as the DM teams say travel in the area is safe, team members will visit the historical sites and assess the damages.

Multiple individuals (both KI and CI) shared concerns about the need for better shelter usage, maintenance, and management. If a disaster occurs, a person with keys to the community shelter would need to reach the destination safely and open the building for people needing help. Shelter managers must be willing to stay with the building for an extended period. “A lot of elderly people do not want to use the shelters and stay at home” (KI7). Recent renovations have been made to community center shelters (adding more water storage and ramps for disability access) and updates to roads with plans for adding digital displays to disseminate current information during disasters (KI8).

At the individual level, residents are encouraged to make structural preparations to limit property damage. Wooden houses should be replaced with concrete and metal shutters on windows are recommended over wood. “Resilient communities have strong fences; pruned trees, good drainage, water catchment, and then food stores” (KI13).

3.6 Communication

There were varying levels of awareness regarding disaster communication plans. When questioned about notifications of anticipated disasters (typically incoming hurricanes) and the need to prepare, most individuals mentioned radio, television, and social media broadcasts with radio fading out in favor of *WhatsApp*. Churches perform a central role in disaster preparedness with announcements during church services providing important notification and education related to disaster preparedness.

For disasters with limited warning (such as an earthquake or tsunami), there are few specific communication plans. Leaders in DM are researching the cost of warning sirens that could

withstand salty air, sea blasts, and the rough weather conditions found in the Caribbean. “Being able to notify the general public...through sirens, telecommunications, WhatsApp, so getting that warning system you can really alert people in terms of tsunamis” (KI4).

Communication strategies focused on various training programs to help prepare community members to reduce injury or property loss. KI focused on disaster drills, but frequently mentioned the lack of clear communication during these events, particularly if an important person in the chain of command was absent. School programs provide disaster awareness and preparation for children, who will in turn help to educate their families. “Children are the greatest messengers...when we get the message to them [kids], you can rest assured that they will go back and say, you know, ‘Mommy, the lady from NEMA said...’” (KI21).

3.7 Connectedness/Engagement

Connectedness and engagement are strategic interventions that focus on reaching out to both organizations and individuals to establish productive and meaningful relationships. There was a strong sense of community and faith that people would help one another. Residents reported that in times of need, “Well we go and we inform all of our neighbors” (CI5). Several participants expressed that family and community connectedness helped them feel secure when warnings were made about approaching storms. “[After Hurricane Maria], back in September, you see destruction. But when I went back in February, I was kind of pleased that...we are resilient people...We have to love each other. Be there for each other. So we will help ourselves to do what we have to do to survive” (CI2).

Several participants voiced the importance of volunteers. Small island communities have a limited pool of volunteers that require those involved to train to fulfill multiple roles. “The pool of persons here is so small; we tend to have one set of persons trained multiple times. So when that person migrates or is sick...it leaves a void” (KI8). There was a belief that some residents should be compensated for their volunteer efforts. “I don't know if it is just the culture here in St. Kitts, but...they would probably be looking for something. Some reward” (KI17).

Neighbors helped within their own communities and local churches served as hubs for networking and assistance. “The people in the community assist each other...the church is a shelter...they bring food baskets to help” (CI18). “The church had help me. A few years back...the roof... they give me the money to buy the materials to get it fixed” (CI11). Establishing a network of volunteers who maintain readiness to help is challenging. “People have the skills, but they don't really want to come into meetings or participate in the committee...it's hard to get other people on board and involved to come to meetings to actually make the change” (KI18).

Personal financial priorities may impact decisions to volunteer. “When you ask persons to be a volunteer, they automatically ask, ‘what's the pay like?’” (KI6). “Sometimes persons cannot afford time off because they are all volunteers so it depends on the willingness of the workplace to pay during time off...The main hindrance is the volunteer base because it is hurting the pocket” (KI3). While gaining a roster of reliable volunteers was difficult to achieve, several participants acknowledged that most residents would contribute when necessary. “Despite the

many challenges that we have, when we call on our volunteers, they are always willing to help and to go the extra mile” (KI16). To encourage community connectedness, government leaders hold community meetings. “We have our day walks through the community...making people more aware of their community. We feel that by building a greater bond amongst the members we will get better results...activities that build greater relationships” (KI4).

3.8 Complexity and culture

The *EnRiCH Framework* (O'Sullivan et al., 2013) identified complexity and culture as important factors in adaptive capacity. The framework discusses complexity as an overarching concept including self-organization, non-linearity, emergent behavior, interconnectivity, and feedback. The research team noted many layers of complexity when studying this population's adaptive capacity. As was mentioned in the discussion of the empowerment driver, multiple CI discussed the importance of self-organization and self-reliance. Several participants shared stories and disaster descriptions in a non-linear fashion. Emergent behaviors were mentioned as innovations and changes people were making based on recent disasters. Interconnectivity is a unique aspect of island communities where actions of one group affect many others. Lastly, feedback and follow-up came from KI and a presentation of initial findings was shared with government officials.

Culture was embedded in every theme identified in this study. Residents often expressed that their culture contributed to their sense of belonging and connectedness to their community. They wished to stay despite the potential for, or aftermath of, a disaster. “Some elderlies, they just...They will literally tell you, “This is my house, I'm not going anywhere” (CI19).

Many participants remarked that the culture was very laid back, which led to complacency and a lack of motivation to prepare for disasters. “Our NEMA...they send out the warning... People, like they are laid-back...our people waits [sic] too late to start to prepare...sometimes don't take it too serious” (CI23). This complacency is coupled with a perceived lack of financial resources to adequately prepare, and a mistrust of government practices related to distribution of aid.

A cultural perspective expressed by many participants was their belief that they had a responsibility to care for the elderly. One elder said “I'm 93. If a hurricane comes tonight, somebody should come to see me” (CI24).

A strong belief in spirituality was evident in the sentiments of both fatalism and self-reliance in the community. Residents stated that their faith gave them strength. Some residents felt that preparing for disasters was not necessary due to their personal religious beliefs. If it was “God's will,” they were spiritually prepared to die or deal with the consequences of an event. “Well, you could get prepared as much as you want but if the hurricane hits you it's going to hit you” (CI8). “Well, I say God is everywhere, and he will take care of me” (CI11). Some participants felt that insurance was not helpful, and the government had a responsibility to take care of its citizens. These findings reinforced the need identified in the literature for appropriate, feasible, tailored strategies in the context of the local community.

4 DISCUSSION

The *EnRiCH Framework* provided the structure for analyzing the qualitative interview data obtained from KI and CI on SKN. The three framework drivers of adaptive capacity (Empowerment, Innovation, and Collaboration) highlighted the varying perspectives of government officials compared to the general population. Examining the data through the four framework strategies (Awareness / Communication, Asset / Resource Management, Upstream Leadership, and Connectedness / Engagement) provided evidence of excellent work already being done on SKN for disaster preparations, but also revealed barriers to the further development of adaptive capacity and community resilience to disasters.

Throughout the interview process and thematic analysis of the transcripts, the researchers noted distinct differences between the responses of the KI and the CI. KI were typically government officials who described detailed disaster plans for their particular areas and commented on disaster preparations and drills as the main strength of their community resilience. The most common barrier to preparation mentioned by KI was the absence of important personnel from disaster drills or the role confusion from the frequent turnover of leadership positions. Researchers also noted that KI often seemed unaware of the detailed disaster plans of other organizations, such as the hotel industry.

In contrast, the CI did not mention organizational-level disaster plans at all. CI did not appear to know that disaster drills were a regular occurrence and had rarely participated in one. CI conversations tended to revolve around personal empowerment of preparing one's own home for a disaster or deciding to go to a shelter. These citizens mentioned strengths of disaster preparedness as people helping each other, disaster communications shared by multiple means, church aid, and the presence of multiple community shelters. Barriers included complacency, perceived inconsistency in resource allocation, and favoritism. Citizens verbalized the importance of self-preparation instead of government reliance. This apparent discrepancy between perceptions of the KI and CI may be due to the siloing of information or the complacency from hearing about infrequently occurring disasters.

4.1 Limitations

Qualitative research is dependent on the skill of the individual researchers and is influenced by personal bias. Cultural differences between researchers and participants may have affected the collection and interpretation of the data. Because participants were anonymous, findings are not reproducible or verifiable. Therefore, findings cannot be generalized to a larger population and are not transferable to another setting. The disparity in attitudes between leadership and informants not addressed with the use of the *EnRiCH Framework* requires further investigation. Researchers noticed hesitancy from several participants when discussing the government specifically, which may have limited the transparency of their responses. Participant hesitancy may be due to researchers being foreigners, or reluctance to criticize the government to outsiders. Research team members each had diverse life and professional perspectives that influenced their interview techniques and interpretation of the data.

4.2 Conclusion

This is the first study applying the *EnRiCH Framework* to an at-risk, low resource, international population prone to natural disasters. Findings from this study provide valuable insight into community resilience for disaster preparations and management on island nations. Analyzing the current perceptions of disaster preparations can highlight vulnerabilities and help in population-level risk reduction. This study highlights the limitations of creating an effective disaster plan in low-resource communities. This study emphasizes the value of CBPR to understand barriers to disaster mitigation response and the potential discrepancies in perceptions between KI and CI. Further research could analyze this disparity in attitudes toward disaster preparedness.

The government officials of SKN recognize the dangers of having one person within the disaster response plan who could be a single-point-of-failure if they are not able to fulfill their designated role(s) during a disaster event or drill. An innovative strategy to help reduce this barrier would be to cross-train individuals within disaster response plans to assist in the event of key players being unable to fulfill their assigned duty. Clearer role descriptions within disaster plans and publicizing these plans more widely may help decrease the siloing of information. Small island countries have the unique position of having local and national governments as the same entity. This model allows a close connection with the community while simultaneously balancing international collaborations and partnerships.

This research team recommends applying the *EnRiCH Framework* to additional populations. The model could be refined to include more specific components related to DM. Specifically, we suggest discussing the influence of culture within each driver and strategy as applicable. Similarly, the concept of complexity can be applied as a characteristic of the research rather than a separate component in the model. Further analysis could be done on the additional themes found in the interviews which did not fit into the model specifically.

For future research, the procedure of interviewing KI and CI about disaster preparedness and community resilience could be duplicated in several other contexts. It would be interesting to compare this information to other small island nations to learn if these findings are consistent. Additionally, this research could be replicated within the context of different disaster events, different populations and in both urban and rural settings.

ACKNOWLEDGMENT

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CONFLICT OF INTEREST

None.

REFERENCES

- Bakema, M. M., Parra, C., & McCann, P. (2019). Learning from the rubble: The case of Christchurch, New Zealand, after the 2010 and 2011 earthquakes. *Disasters*, **43**(2), 431– 455. <https://doi.org/10.1111/disa.12322>
- Baudoin, M. A., Henly-Shepard, S., Fernando, N., Sitati, A., & Zommers, Z. (2016). From top-down to “community-centric” approaches to early warning systems: Exploring pathways to improve disaster risk reduction through community participation. *International Journal of Disaster Risk Science*, **7**(2), 163– 174.
- The World Bank (2017). *Climate and disaster resilient transport in small island developing states: A call for action* (No. 120998, pp. 1– 131). Washington, DC: The World Bank.
- Drzewiecki, D. M., Wavering, H. M., Milbrath, G. R., Freeman, V. L., & Lin, J. Y. (2020). The association between educational attainment and resilience to natural hazard-induced disasters in the West Indies: St. Kitts & Nevis. *International Journal of Disaster Risk Reduction*, **47**(101637), 1– 7. <https://doi.org/10.1016/j.ijdrr.2020.101637>
- Fonteyn, M. E., Vettese, M., Lancaster, D. R., & Bauer-Wu, S. (2008). Developing a codebook to guide content analysis of expressive writing transcripts. *Applied Nursing Research*, **21**(3), 165– 168. <https://doi.org/10.1016/j.apnr.2006.08.005>
- Généreux, M., Petit, G., Roy, M., Maltais, D., & O'Sullivan, T. (2018). The “Lac-Mégantic tragedy” seen through the lens of the EnRiCH community resilience framework for high-risk populations. *Canadian Journal of Public Health*, **109**(2), 261– 267. <https://doi.org/10.17269/s41997-018-0068-z>
- Gibbs, T. (2001). *Natural hazards in the Caribbean*. Retrieved: June 10, 2018 from https://www.oas.org/pgdm/document/BITC/papers/gibbs/gibbs_02.htm
- Kelman, I. (2017). Linking disaster risk reduction, climate change, and the sustainable development goals. *Disaster Prevention and Management*, **26**(3), 254– 258. <https://doi.org/10.1108/DPM-02-2017-0043>
- Mercer, J., Kelman, I., Lloyd, K., & Suchet-Pearson, S. (2008). Reflections on use of participatory research for disaster risk reduction. *Area*, **40**(2), 172– 183. Retrieved from: <http://www.jstor.org.unco.idm.oclc.org/stable/40346112>
- Milbrath, G., Snyder, A., Drzewiecki, D., Hijmans, K., & Hood, T. (2019). *St. Kitts and Nevis Community Disaster Resiliency Assessment Report*. St. Kitts and Nevis Ministry of Health.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, **41**(1), 127– 150.
- O'Sullivan, T. L., Kuziemy, C. E., Toal-Sullivan, D., & Corneil, W. (2013). Unraveling the complexities of disaster management: A framework for critical social infrastructure to promote population health and resilience. *Social Science & Medicine*, **93**, 238– 246. <https://doi.org/10.1016/j.socscimed.2012.07.040>

- O'Sullivan, T. L., Kuziemy, C. E., Corneil, W., Lemyre, L., & Franco, Z. (2014). The EnRiCH community resilience framework for high-risk populations. *PLoS Currents*, *6*. <https://doi.org/10.1371/currents.dis.11381147bd5e89e38e78434a732f17db>
- Oteng-Ababio, M. (2013). 'Prevention is better than cure': Assessing Ghana's preparedness (capacity) for disaster management. *Jàmbá: Journal of Disaster Risk Studies*, *5*(2), 1– 11.
- Pan American Health Organization. (n.d.) *Saint Kitts and Nevis*. Retrieved September 10, 2021 from <https://www.paho.org/en/saint-kitts-and-nevis>
- Riches, C., & Stalker, P. (2016). St Kitts and Nevis. In *A Guide to Countries of the World* (4th edn.). Oxford University Press.
- Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*, *1*(1), 39– 54. <https://doi.org/10.1191/1478088704qp004oa>