

A QUALITATIVE STUDY OF THE IMPACT OF HURRICANE MARIA ON UNIVERSITY STUDENTS WITHIN A COLONIAL CONTEXT

UN ESTUDIO CUALITATIVO SOBRE EL IMPACTO DEL HURACÁN MARÍA EN ESTUDIANTES UNIVERSITARIOS EN UN CONTEXTO COLONIAL

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ABSTRACT

Hurricane Maria devastated Puerto Rico in 2017, deeply affecting university students who had to balance academic demands with recovery efforts. This study, based on a qualitative phenomenological approach with 13 participants, explored their experiences through the lens of social determinants of health (SDOH) and the colonial context. Thematic analysis revealed losses, resource scarcity, academic stress, limited access to health and education, economic instability, anxiety, socio-political neglect, and community resistance. Findings show how colonial legacies magnify disaster impact, underscoring the need for equitable policies addressing both immediate recovery and systemic inequalities.

KEYWORDS: climate disasters, Hurricane Maria, academic recovery, colonialism, traumatic stress.

RESUMEN

El huracán María devastó Puerto Rico en 2017 y afectó profundamente al estudiantado universitario. En este estudio cualitativo fenomenológico, basado en entrevistas a 13 estudiantes, exploramos sus experiencias a través de los determinantes sociales de la salud (DSS) y el contexto colonial. En el análisis temático identificamos pérdidas, escasez de recursos, estrés académico, limitaciones en salud y educación, inestabilidad económica, ansiedad, contexto sociopolítico, así como redes de apoyo, resistencia comunitaria y activismo. Los hallazgos evidencian cómo los legados coloniales amplifican los efectos del desastre. Destacamos la necesidad de políticas equitativas que prioricen a poblaciones vulnerables y recuperación inmediata con cambios estructurales para reducir desigualdades.

PALABRAS CLAVE: desastres climáticos, huracán María, recuperación académica, colonialismo, estrés traumático.

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As global temperatures rise, extreme weather events disproportionately affect populations with colonial histories of oppression, such as Puerto Rico (Benach et al., 2019; Fortuna et al., 2023; Pérez Ramos et al., 2022). Hurricane Maria, in September 2017, devastated infrastructure and exposed systemic vulnerabilities that heavily impacted students already burdened by academic pressures and financial instability (Brusi & Godreau, 2019; Nelson et al., 2020; Orengo-Aguayo et al., 2019; Rodríguez Vázquez, 2022). Extended institutional closures, power outages, inadequate housing, and limited health services further hindered academic performance and well-being (Brusi & Godreau, 2019; Orengo-Aguayo et al., 2019).

Puerto Rico's status as an unincorporated U.S. territory of the United States since 1898, following the Spanish-American War and the signing of the Treaty of Paris, reflects Quijano's (2007) concept of coloniality of power, a system of domination sustained by capitalism, racial hierarchies, and structural oppression (Caban, 2025; Peón, 2020). This colonial legacy continues to shape education, health, and emergency response, reinforcing inequalities (Hernández Ayala, 2024; Rivera Aponte, 2024; Rodríguez-Díaz, 2018; Rodríguez-Madera et al., 2021). The inadequate disaster response after Maria reflected abandonment, necropolitics, and human rights violations (Cabrera, 2019; Rivera Aponte, 2024; Rodríguez Vázquez, 2022). Decades of colonial governance have produced a fragile socioeconomic landscape marked by poverty, unemployment, migration, and dependence on external aids, limiting recovery capacity (Gahman et al., 2021). These inequities, as social determinants of health, undermine resilience and worsened disparities in education, healthcare and economics stability (Lafarga Previdi & Vélez Vega, 2020; Martin & Pace, 2025).

Student Challenges as a Precursor for Climate Disaster

Even before Maria, Puerto Rico's public education was in crisis: 167 K-12 schools had

closed in 2016 due to financial debt, while vouchers promoted privatization, widening inequalities and limiting growth for low-income students (Brusi & Godreau, 2019; Cowen, 2024). The public university in Puerto Rico faced similar disinvestment, with rising tuition and budget cuts fueling major strikes in 2010, 2011, and 2017 (Associated Press, 2017; Bonilla-Santiago, 2018; Santiago, 2011). These financial constraints, rooted in colonial governance, reduced access to affordable education and jeopardized students' opportunities as well as Puerto Rico's long-term economic development and recovery (Bonilla-Santiago, 2018).

Conceptual Framework

We analyzed the impact of Hurricane Maria on university students living in Puerto Rico using the social determinants of health (SDOH) framework, situated in the island's colonial relationship with the United States. The SDOH framework emphasizes that health outcomes are shaped less by individual choices and more by socio-economic conditions, community contexts, and access to services (Allen et al., 2014). This lens allows a comprehensive understanding of how social, economics, and environmental factors intersect to affect students' well-being in the aftermath of disaster.

The research questions for this study were as follows:

1. How did Hurricane Maria and the response shaped by Puerto Rico's colonial status and systemic inequalities impact student's educational trajectories and mental health?
2. Within disrupted access to education as a social determinant of health, how did students navigate and cope with the challenges caused by Hurricane Maria?

TABLE 1.
Mapping of Research Questions to Codes to Social Determinant of Health.

Question 1: What was the impact of Hurricane Maria on educational trajectories?		
Thematic Codes	Description	Social Determinant of Health Type <i>Example Quote</i>
Losses and Resource Scarcity	Personal and material losses including death of loved ones; property including homes, household, animals and crops; basic services	<u>Economic; Environmental; Social</u> <i>In my town, the entire area was flooded, and people lost their lives.</i>
Educational Stressors	Interruption of classes leading to delay in academic progress	<u>Economic</u> <i>My thesis process was interrupted, and I had to extend one more year and pay for another year.</i>
Educational and Healthcare Access	Transportation challenges as barriers to access because of fuel shortages and damaged roads.	<u>Environmental</u> <i>I got sick, and so did my older brother. We needed to go to the hospital but couldn't leave the house, because my street is a dead-end, and it was blocked by trees and debris.</i>
Economic Instability	University closures interrupted work-study and financial aid funding.	<u>Economic</u> <i>I am a graduate student, and at that time, we hadn't been paid.</i>
Impact on Mental Health: Anxiety and Depression Symptoms	The stress and uncertainty of the hurricane led to symptoms of anxiety and depression, as well as sleep disturbance and re-living of the trauma.	<u>Social</u> <i>Anxiety all the time... on a scale of 1 to 10, it was a 7 all the time.</i>
Socio-Political Context	Slow and inadequate government response on local and federal level exacerbated impact of the hurricane.	<u>Social; Environmental</u> <i>How is it possible that that strong of a hurricane resulted in us barely receiving any help?</i>
Question 2: How did students navigate and cope after Hurricane Maria?		
Thematic Codes	Description	Social Determinant of Health
Social Support	Support from family, friends, and university peers was critical for perseverance.	<u>Social</u> <i>The fact that my family was always there, together, on the same boat—that gave us emotional strength.</i>
Community Collective Resistance	Individuals came together as a community to help each other through recovery, sharing resources and addressing damages.	<u>Social; Economic</u> <i>The community transformed into small collection centers. People didn't fully understand what that entailed, but everyone was united in searching for a common solution.</i>

METHOD

We employed a qualitative phenomenological design to explore the lived experiences of university students in Puerto Rico following Hurricane Maria, focusing on the meaning and essence of their experiences (Creswell & Creswell, 2017; Williams, 2021). This methodology enables a comprehensive exploration of lived experiences, allowing researchers to capture complex emotional and psychological dimensions (Khan, 2014).

Participants

From a larger sample of 158 students who completed a quantitative online survey (Porche & Jiménez, 2021), 13 volunteered for in-depth interviews. The sample included six

undergraduates (five females, one male) and seven graduates (four females, two males). We selected participants using purposive sampling. Eligibility criteria required being 18 years old or older, enrolled at University of Puerto Rico (UPR), Río Piedras Campus between August and December 2017, and fluent in Spanish. Participant's mean age was 23.3 years old ($SD = 5.4$), over half (56.3%) lived with parents; 70% lived in urban areas.

Data Collection and Procedure

The study was approved by the UPR-Río Piedras Institutional Review Board (protocol #1920-004). We recruited participants via institutional email, and campus flyers. We collected data in person between September and December 2019 through individual semi-

structured interviews in Spanish at the university's in-house clinic, each lasting approximately one hour and exploring student's social, economic, and emotional challenges before, during, and after Hurricane Maria. The interviews were conducted, recorded, and transcribed by clinical doctoral students who are co-authors on this article.

Qualitative Data Analysis

We analyzed interview transcripts using deductive and inductive methods (Miles & Saldaña, 2020). In-vivo and a priori codes guided a thematic analysis of students' experiences. We refined a codebook informed by the SDOH framework by merging redundant codes and distinguishing subthemes. We recoded transcripts by multiple researchers to ensure reliability, and resolved discrepancies through team discussions to reach consensus.

RESULTS

In this section, we discuss the themes that emerged from each research question. Our first question was: How did Hurricane Maria and the subsequent response, shaped by Puerto Rico's colonial status and systemic inequalities, impact the educational trajectories and mental health of postsecondary students on the island? The major themes we identified were: losses and resource scarcity, education stressors, education and health care access, economic instability, anxiety symptoms, and socio-political context.

Losses and Resource Scarcity

Participants reported profound losses, including family members, animals, homes, crops, and access to basic services. One student recalled: "The entire area was flooded, people lost their lives, and many houses and animals were gone. I felt deeply sad" (S102). Another shared the devastation to their livelihood: "We are farmers... the bananas were a total loss. There wasn't going to be food or money" (S105). For others, the

loss was personal. "My grandmother's house was destroyed, a direct blow to our hearts" (S111). These experiences highlight the multifaceted nature of loss (material, cultural, and emotional) underscoring the need for relief efforts that also address long-term healing and community rebuilding.

Educational Stressors

Students faced heavy academic burdens, from delayed timelines to intensified workloads. One explained: "I lost the semester but wanted to graduate on time, so I overload credits. I still blame Maria" (S101). Another described: "My thesis was delayed by a year, adding financial and emotional strain" (S103). Compressed semesters increased stress: "We had to learn six months of content in three; most of us struggled" (S107). Some missed graduate admissions exams and opportunities: "Deadlines for GRE and TOEFL passed, so I had to postpone studies for a year" (S108). These accounts reveal how disrupted education compounded financial and emotional pressures, leaving students with guilt, frustration, and instability. These stories emphasize the need for flexible, trauma-informed academic policies to support students navigating disaster-related challenges.

Education and Health Care Access

After the hurricane, most participants reported serious barriers accessing education and health services. Fuel shortages, blocked roads, and unreliable transportation made commuting nearly impossible. Ten out of 13 participants reported difficulties accessing resources or faced barriers to attending college. One student shared: "Gasoline was scarce" (S108).

The inaccessibility of roads further exacerbated the problem. It was difficult enough to merely get to the campus. Some of the roads were still blocked, and there were no cars or buses available to purchase tickets to get to there. Electricity was unreliable, and one student shared: "Roads were blocked,

even the train would stop mid-tunnel, leaving us stranded” (S107). These conditions compounded the disruptions of academic routines and increased stress.

Healthcare access was similarly restricted. Students described being unable to reach hospitals due to debris, overcrowded emergency rooms, and shortages of medicine. One recalled: “It took us two and a half days to reach a hospital; my street was blocked by trees and debris, the hospital was packed, running generators, and short on medications” (S102). Another noted difficulty obtaining medicine for relatives because pharmacies remained closed (S113).

These testimonies illustrate how transportation failures, inadequate infrastructure, and strained health systems created overlapping crises. Students were forced to balance educational aspirations, health needs, and survival within a system ill-prepared to meet their demands, highlighting the need for integrated recovery policies that address both infrastructure and human well-being.

Economic Instability

Five out of 13 participants described financial hardship after the hurricane, particularly due to delayed work-study payments and financial aid. When the university closed, they found themselves in a precarious and vulnerable situation. One graduate student recalled:

“We didn’t get paid until November, even though expenses kept rising. Credit agencies didn’t care” (S109). Another noted: “I hadn’t received my aid until December; the little money I had left was barely enough” (S103).

Students also highlighted the broader issue of low wages and high living costs, reflecting colonial inequities: “The minimum wage is \$7.25, but a case of water costs \$6.00. Without a paycheck, we had no idea when we could work again” (S111). These narratives show how dependence on delayed

institutional funds, combined with structural economic inequality, deepened students’ vulnerability. Recovery requires not only immediate financial relief but also long-term reforms to address Puerto Rico’s systemic economic disparities.

Impact on Mental Health- Anxiety Symptoms

All participants reported heightened anxiety and depressive symptoms linked to stress and uncertainty associated with the hurricane. One student described: “I woke up crying in the middle of the night without reason. I thought, damn, this is bad” (S101). Another shared: “My anxiety was a 7 out of a scale of 10 all the time” (S104). Others expressed despair: “There came a time when it wasn’t anger but hopelessness, frustration, feeling without direction, thinking the light would never return” (S108).

These accounts illustrate the deep psychological toll of prolonged disruption, with persistent sadness, fear, and loss of hope. They highlight the need for trauma-informed mental health services, accessible counseling, and sustained institutional support to help students cope with the long-term emotional consequences of disaster (Saeed & Gargano, 2022).

Socio-Political Context

Participants voiced strong dissatisfaction with the government’s response, linking inadequate aid to Puerto Rico’s colonial status and the treatment of its people as second-class citizens. A participant mourned the many lives lost during Hurricane Maria and recounted presenting casualty data to Harvard visitors and questioning why Maria’s devastation received far less support than hurricanes in the US mainland: “This is our true reality. The fact I had to tell this group of gringos this is how we live in a colony... how is it possible that we received so little help compared to Katrina or Irma?” (S111). Others highlighted historical trauma and systemic neglect: “Those in power lacked a strong reference point of past harm, which shaped

their inadequate response” (S113); other expressions focused on misinformation and lack of transparency. For example, “You don’t know what is going to happen, you don’t have any news, and the media is hiding information” (S109). These narratives reflect the intersection of colonial governance, systemic neglect, and public mistrust, underscoring how political subordination continues to shape Puerto Ricans’ disaster experiences.

Coping Strategies

Our second research question was: Within the context of disrupted access to education as a social determinant of health, how did students in Puerto Rico navigate and cope with the challenges caused by Hurricane Maria? The major themes we identified were social support, community resistance, and activism.

Social Support

All participants emphasized the crucial role of family, friends, and peers in coping after the hurricane. One student explained: “The fact that my family was always there, together, on the same boat, gave me emotional strength” (S107). Another noted “My whole family came together and supported each other, we didn’t have a cistern, but my aunt did, so somehow, we managed by moving there” (S110). The importance of social support and bonding in overcoming adversity was also evident in the following narrative:

During Maria, everyone came together, sharing supplies, and supporting one another. Unity was essential because no one could handle this situation alone. That sense of community was essential, my cousin and I took turns standing in line. If she didn’t go, I couldn’t go; we relied on each other. It was a vital lesson: unity is key, and you must never forget that you need other people.” (S101).

The support from family and friends was so meaningful that one participant chose to remain on the island, even when given the

opportunity to relocate. They preferred to rely on teamwork and the support of fellow university students as they navigated the aftermath of the natural disaster.

Community Resistance

A central theme consistently expressed by all participants was the vital role of community support and solidarity. The community came together to help each other by sharing food, electricity, and even clearing fallen trees from the streets that were blocking roads. An example of this support is a participant’s experience of a neighbor sharing electricity:

The only access we had to electricity was through a neighbor who gave us an extension cord. With it, we were able to connect at least one fan and the refrigerator. My dad, my mom, my brother, and I all slept in the living room so we could share the benefit of the fan. (S110)

This participant also mentioned that neighbors exchanged goods to help each other: “They came out and brought us ice, and we gave them bottled water because, fortunately, we had some”. Another participant expressed the following:

I gave water to everyone—my uncles, my family, friends, anyone who needed water came to our house and took gallons. Of course, it later showed up on the bill, but honestly, I didn’t care at the time. It was like: You don’t have water? Come over. You need to wash clothes? Come to the house. We were always mindful of helping others. As for food, my mother taught me to always have extra, to buy more, and to keep canned goods stocked. Because of that, I didn’t have to go out and buy food until about a month later. (S112)

The sense of social connectedness, particularly through community support, proved essential in navigating difficult times and overcoming challenges. The community’s

active role in self-management was reflected in the following statement:

The community transformed into small collection centers. People didn't fully understand what that entailed, but everyone was united in searching for a common solution. They were all facing the same challenges, and instead of overthinking, they simply acted. (S111)

The collective response demonstrated by the community in supporting each other through shared resources and solidarity laid the foundation for students to seek broader institutional support. Just as community members came together to share essentials, participants later advocated for academic flexibility and support from the university, emphasizing the need for understanding and adaptability during the ongoing challenges. This shift toward advocating for institutional change reflects a form of activism, where students not only fought for their immediate survival but also for the structural support needed to continue their education in the aftermath of the disaster.

Activism

The university sustained significant structural damage, delaying the start of classes. In response, activism became a unifying force in the reconstruction efforts. Participants saw themselves as agents of change and social justice, motivated by the lack of government response. For example, a participant described the collective effort: "Everyone came together to help rebuild the university. Many students volunteered to clean up on their own initiative, without being asked—they organized themselves." Their dedication carried profound symbolic meaning, as a participant further explained: "I believe this reflects the love we feel for our university and alma mater, which we must protect and uplift. A rebuilt university symbolizes a country that is moving forward" (S113).

In the face of significant structural damage, activism emerged as a key response to the crisis, with students playing an active role in rebuilding the university. Their self-organized efforts symbolized a broader sense of community solidarity and resistance. This collective action not only facilitated the physical restoration of the university but also served as a powerful symbol of Puerto Rico's strength and determination to overcome adversity. The activism demonstrated a commitment to both social justice and the idea of progress, with the reopening of the university offering hope and a sign of recovery and renewal.

The unity shown by participants in their activism was also reflected in their efforts to address the academic challenges brought on by the disaster. Similarly to their collective rebuilding efforts, participants advocated for flexibility and understanding in navigating the logistical difficulties of continuing their education, as stated in the following narrative:

At least when it came to college classes, we were quite outspoken and communicated openly with our professors. For example, one time, when we had to turn in an online exam and the power went out, maybe under normal circumstances, we would have panicked and scrambled to find a solution. But that day, we talked to the professor, explained that we didn't have power, and the professor gave us an opportunity to turn it in later. We managed situations like this by talking and asking for help when it was needed. (S111)

The need for academic flexibility during crises, such as unstable electricity and internet access, was emphasized by students. Open communication with professors allowed students to manage challenges and secure extensions, highlighting the importance of flexibility and understanding in supporting students during disruptions.

DISCUSSION

Social Determinants of Health

The SDOH framework emphasizes that health outcomes are shaped not only by individual choices or genetic factors but also by broader socio-economic conditions, cultural contexts, and access to essential services (Allen et al., 2014). This study affirms that the physical and mental well-being of Puerto Rican university students is deeply influenced by socio-historical forces, particularly those rooted in the island's ongoing colonial relationship with the United States. Hurricane Maria in 2017 starkly exposed these colonial dynamics. The inadequate and delayed government response highlighted long-standing patterns of systemic abandonment (Cabrera, 2019; Rivera Aponte, 2024; Rodríguez Vázquez, 2022). Far from being a mere natural disaster, the hurricane intensified structural inequalities tied to Puerto Rico's colonial status, worsening disparities in healthcare, education and economic stability. University students, as a microcosm of Puerto Rican society, exemplify the vulnerabilities produced by decades of underinvestment in public infrastructure and social services. Systemic poverty, limited access to resources, and fragile institutions, conditions shaped by prolonged colonial governance, have left students especially vulnerable. As Brusi and Godreau (2019) note, the storm revealed the fragility of the educational system, disrupting academic progress and deepening existing inequalities.

Colonial era policies, such as the Jones Act,¹ have further constrained Puerto Rico's autonomy, limiting its capacity for sustainable development and timely disaster response (Martin & Pace, 2025). These constraints delayed critical relief efforts and restricted access to resources for students and their communities. The aftermath of the hurricane magnified material hardships, including food

insecurity, power outages, and lack of internet access, all of which significantly interfered with students' education and well-being (Calianos, 2018; Rodríguez-Madera et al., 2021; Yordan-López et al., 2018).

Structural Disruptions and Resource Scarcity

Students in this study reported that Hurricane Maria caused prolonged power outages, public transportation failures, and extensive damage to educational institutions-disruptions that disproportionately impacted those who relied on these essential services for both academic success and personal well-being. Limited access to food, water, and healthcare further compounded the challenges, especially for students already facing economic hardship. These findings are consistent with previous research indicating that the hurricane led to sudden financial strain due to family losses and a broader economic slowdown, which significantly hindered students' ability to finance their education (Bonilla-Santiago et al., 2018; Brusi & Godreau, 2019; Green & Cochrane, 2018; Rodríguez-Madera et al., 2021). Marginalized groups, particularly students from economically disadvantaged backgrounds, were disproportionately affected by this climate disaster. As Rodríguez-Díaz & Lewellen-Williams (2020) observed, racism was framed as part of the complex relationship between Puerto Rico and the United States, and as a barrier to an adequate emergency response.

Mental Health Crisis Among Students

Beyond the physical devastation, Hurricane Maria also triggered a mental health crisis among students. Many experienced anxiety, grief, and uncertainty about their future, compounded by the loss of homes and loved ones. Rodríguez-Madera et al. (2021) identifies limited access to mental health services as a critical issue, demonstrating how

American-owned, and crewed primarily by U.S. citizens or permanent residents.

¹ The Jones Act is a U.S. federal law that requires goods shipped between U.S. ports to be transported on vessels that are American-built,

colonial policies continue to restrict Puerto Rico's health resources in times of crisis. Sherwood et al. (2022) argue that post-disaster mental health challenges must be understood within their socio-political context, particularly for students who experience both immediate trauma from the hurricane and chronic stress from systemic inequities and inadequate governmental support.

The intersection of resource scarcity and mental health is crucial for understanding the full impact of Hurricane Maria on university students. Research suggests that environmental stressors, such as food and water insecurity, are strongly linked to increased mental health risks among affected populations (Stukova et al., 2023). The findings of this study revealed elevated levels of anxiety, depression, and trauma, which further complicated students' academic recovery.

Environmental Justice and Recovery Challenges

The recovery process after Hurricane Maria was also deeply affected by environmental justice issues, resulting from federal government negligence (Rivera-Aponte, 2024). Structural inequalities, shaped by decades of colonial neglect, left Puerto Rican university students particularly vulnerable, further demonstrating how historical oppression continues to shape contemporary social determinants of health.

Although participants in this study demonstrated resilience, they simultaneously expressed frustration over systemic inequalities that continue to hinder recovery efforts. This duality illustrates the complexity of resilience, not just as a survival mechanism but also as a form of resistance against historical injustices that have shaped Puerto Rico's socioeconomic landscape.

Reframing Resilience: From Survival to Resistance

The analyses conducted by García et al. (2024) and Torres & Brooks (2022) support

the argument that resilience in Puerto Rico must be understood through the lens of colonial history. They emphasize that responses to natural disasters must acknowledge the historical injustices embedded in colonial policies and institutional practices. These scholars argue that an inclusive recovery process must prioritize the voices and experiences of the most affected communities, particularly those marginalized by race and economic status. To create a more equitable and sustainable recovery, institutional frameworks must move beyond superficial resilience narratives and instead focus on resistance, systemic transformation, and structural change.

Student activism has been a prominent form of resistance in Puerto Rico, exemplified by the 2017 strike led by students at the University of Puerto Rico in Río Piedras in opposition to budget cuts imposed by the Financial Oversight and Management Board for Puerto Rico and enforced by the local government. Beyond the university, widespread civic mobilization emerged in response to government corruption. In July 2019, approximately one million people gathered on the Luis A. Ferré Expressway in San Juan, participating in 15 consecutive days of protests that ultimately led to the resignation of Governor Ricardo Rosselló (Rodríguez-Vázquez, 2022). These mass mobilizations underscore the power of collective action and the enduring significance of public protest as a mechanism of resistance.

As identified by this study, the strategies that helped students overcome the challenges posed by Hurricane Maria centered on relational and community-based resistance, including social support from family, friends, and neighbors, as well as collective community activism. Therefore, we emphasize resistance and transformation over resilience, as the latter implies a return to prior conditions that were already deeply inequitable. For university students who persisted, their journey took place within a context of complex trauma and loss. Their

perseverance was driven by pride in their Puerto Rican and academic identities, as well as the unwavering support of family, friends, and community networks. As Serrano-García (2020) highlights, this resistance was expressed through sovereign acts of community activism, demonstrating agency in the face of adversity.

Additionally, the experiences of university students displaced by Hurricane Maria, particularly those who relocated to the continental United States, underscore the complexities of accessing resources and maintaining academic continuity (Capo et al., 2019; Kousky, 2016). Szecsi et al. (2021) conducted a qualitative study revealing the compounded effects of displacement and cultural dislocation on students striving to continue their higher education. These students faced not only personal losses, but also systemic barriers to integrating into new educational environments which often lacked the support systems needed to address their unique challenges.

Current State of the University of Puerto Rico and Hope for the Future

Prior to the devastation caused by Hurricane Maria in 2017, the University of Puerto Rico (UPR) was already grappling with financial constraints. These were due to austerity measures imposed by the Fiscal Oversight and Management Board (FOMB), locally known as *la Junta*, established under the U.S. Congress's PROMESA Act of 2016. Empowered to override local governance to prioritize debt repayment, the FOMB mandated drastic cuts, including nearly a one-third reduction in UPR's budget. Rather than easing after the hurricane, austerity measures intensified, tuition was doubled, service-based student waivers were eliminated, and a "rightsizing" plan led to over \$550 million in cuts over five years (Brusi & Godreau, 2019). These actions significantly compromised UPR's function as a key institution for social mobility in Puerto Rico.

Historically, UPR has been a stronghold of resistance to neoliberal and colonial reforms, with faculty, staff, and especially students leading protests against austerity. However, persistent disinvestment in public education has weakened access to affordable higher education, contributing to the expansion of private and for-profit institutions. This shift has exacerbated social inequality and hindered upward mobility, deepening the structural impacts of Hurricane Maria.

University enrollment across Puerto Rico has declined steadily, a trend driven by demographic changes, successive disasters, and austerity-driven policies. The economic crisis, exacerbated by the FOMB's decisions, has led to cuts in healthcare, education, and public services, worsening poverty, mental health conditions, and social disparities. These intersecting crises have fueled mass migration, economic collapse, and displacement, compounding the long-standing structural challenges facing the island (Rodríguez-Joseph et al., 2020).

In communities facing climate catastrophe under chronic political neglect, colonial legacies, and economic disenfranchisement—such as Puerto Rico—traditional recovery efforts often fall short. Our qualitative research shows that what emerges instead is a powerful interplay of grief, creativity, resistance, and collective care. To support students meaningfully in these settings, the field must move beyond narrow narratives of "resilience," which can obscure the structural violence students and other education community members endure. Building on components of psychological first aid (Hambrick et al., 2014), we recommend creating intentional spaces where students can name harm, find safety and comfort, share lived experiences, and build collective agency, including through intergenerational dialogue and peer-led reflection.

Cultural and artistic practices—storytelling, music, muralism, poetry—should be elevated as tools of political healing and public witnessing, enabling students to reclaim

history and assert voice amid erasure. Education and mental health professionals must be trained in structural competency, with an understanding of how colonialism, austerity, and racism shape student well-being. Such training should support not only trauma-informed care, but also liberatory practices that affirm resistance as a valid and necessary response.

Finally, any response to climate trauma must engage students as co-designers of solutions, not just passive recipients of aid. We recommend investing in student governance structures, resourcing community-led initiatives, and committing to long-term accompaniment. In regions shaped by political abandonment, hope must be built not on temporary relief, but on sustained, justice-rooted partnership and transformation.

Limitations of the Study

The challenges after the hurricane limited the number of participants we were able to recruit for the study. While it was important to gather narratives soon after the experience, some students may have felt unprepared to discuss the trauma and loss resulting from this climate disaster. Given the study's exploratory nature and modest convenience-based sample, the findings may miss some perspectives of university students in Puerto Rico. However, the goal of qualitative inquiry is not to attain representativeness, but rather to "study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2005, p. 3). Further, even with a limited number of interviews, the depth of the conversations increased the likelihood of reaching saturation of themes (Weller et al., 2018). Thus, the study provides a valuable range of insights into the lived experiences of university students in Puerto Rico following Hurricane Maria.

Conclusion

This research underscores the urgent need for policy reforms that address systemic

inequalities and prioritize health, education, and economic stability in disaster response strategies. Achieving health equity in Puerto Rico requires dismantling colonial constraints and fostering a governance model that prioritizes the well-being of its people. Effective recovery requires policies that address SDOH, prioritize equitable resource distribution, and support vulnerable populations. For university students, long-term recovery depends not only on rebuilding infrastructure but also on addressing colonial legacies that continue to perpetuate inequality in Puerto Rico.

Research Ethics Standards

Funding: This research received no external funding.

Conflict of Interest: All authors have contributed significantly to the work, have approved of this manuscript, and declare no competing interest.

Institutional Review Board (IRB) Approval for the Protection of Human Subjects in Research: The Ethics Committee (IRB) of the UPR, Río Piedras campus approved this study (protocol number 1920-004).

Informed Consent: Written informed consent was obtained from all participants as part of the procedures established to safeguard their well-being and ensure compliance with ethical research standards.

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