

Can Empathy protect Against Burnout? Accounts of Work-Related Distress during Compound Disasters in Puerto Rico

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Objective: To identify how healthcare workers experienced work related distress during compound disasters in Puerto Rico.

Methods: Over three weeks, a research team composed of ten undergraduate students and three faculty visited eight healthcare sites in Puerto Rico. The team utilized rapid qualitative methods by conducting observations, informal interviews, and two focus groups. Data were documented in notes and analyzed via a shared RREAL table, where the team collaboratively organized, recategorized, and reviewed the findings.

Results: Participants reported symptoms such as physical tiredness, emotional exhaustion and frustration. High levels of compassion were also present. Researchers apply the concepts of burnout and moral injury to understand how eroding conditions and prolonged disasters produce these emotional conflicts. Moral distress arose when professionals could not meet patients' needs due to a lack of providers, limited resources, and a fragmented healthcare system. Additionally, health care workers experienced conflicts between their work and family roles. We argue that strong connections to their communities and patients foster resilience in healthcare workers and protect against the full range of burnout symptoms. However, these strong community connections can also give rise to moral injury.

Conclusions: Burnout and moral injury coexist in healthcare professionals when they cannot provide the best patient care due to obstacles created by prolonged compound disasters and a broken healthcare system.

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Key words: Burnout, Moral injury, Puerto Rico, Compound disasters, Healthcare workers, Workforce

Puerto Rico is an especially important location from which to study how healthcare workers respond to multiple, overlapping disasters. Puerto Rico has faced numerous disasters over a short time and is vulnerable to climate-related changes such as coastal erosion, flooding, and rising temperatures (1). Over the past decade, Puerto Rico weathered hurricanes Irma and Maria in 2017, ongoing earthquake swarms, the COVID-19 pandemic, and hurricane Fiona in 2022. Each of these events increased the need for medical care and prevention. At the same time, the healthcare system's capacity contracted due to physical damage to infrastructure, chronic power outages, and staff shortages driven by out-migration (2). Federal healthcare policies contributed to inequalities in Puerto Rico long before the 2017 hurricane season (3,4), while austerity measures imposed by an unelected colonial oversight board have limited local autonomy in healthcare planning and oversight, siphoned funds from the healthcare system, and locked in low wages (5). Economic, political, and climatological stressors have combined to continually demand that the healthcare workforce in Puerto Rico do more with less (2).

The terms cascading disasters, disaster swarms, and compound disasters describe situations in which disasters are co-occurring overlapping, and the damage and impact are more than the sum of their parts (6). The National Academy of Medicine (NAM) defines "compound disaster" as "two or more extreme events [that] occur simultaneously. Compound disasters typically result from

multiple causes, can generate multiplicative damage and losses, and are increasing in likelihood as the earth's climate changes" (6). This article explores how compound disasters shape the emotional well-being of health care workers in the southern part of Puerto Rico, a region hard hit by seismic activity and characterized by heightened vulnerability due to lower income levels (vis-a-vis San Juan), population aging, and outmigration (12).

Healthcare workers are both impacted by compound disasters and called on to respond. During disasters and their attendant surges in trauma and mortality, healthcare professionals need to work long hours, improvise when systems are damaged, and comfort and care for patients. At the same time, they have their own personal needs and family responsibilities, which might include damage to their homes, transportation difficulties, supply shortages, and injury or illness. Compound disasters exacerbate these pressures because another crisis starts while the others are ongoing. In Puerto Rico, recovery from Hurricane Maria was still ongoing during the earthquakes and pandemic.

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Given the experience of multiple overlapping disasters and evidence from previous studies, investigators expected to find high burnout levels among Puerto Rican healthcare workers. The National Academy of Medicine defines burnout in the workplace as a "... syndrome characterized by high emotional exhaustion, high depersonalization, and a low sense of personal accomplishment from work" (7). Exhaustion stems from a chronic imbalance of demands and available resources and results in loss of empathy and purpose. Research based in the US during the COVID-19 pandemic showed that burnout increased from 11.6% to 19.0% from 2018-2022 for workers in general (8) and that 90% of clinical personnel, especially nurses, worked with moderate to severe burnout (9). NAM reported that providers in the United States experienced trauma, system pressures, high-stress levels, depression, anxiety, and moral distress, among other symptoms (7). In their meta-analysis of disaster-related burnout among health professionals, Alzailai and colleagues found that burnout negatively impacts physical and mental health, work performance, quality of care, and attitudes and behavior in the workplace (10). Studies of Puerto Rican clinicians who have migrated have shown that the decision to migrate is associated with work-related factors, such as organizational support and emotional exhaustion (2,11). Out-migration exacerbates access barriers and long wait times for medical services, especially in under-resourced areas like southern Puerto Rico (12).

Moral injury was originally detected in veterans whose psychological distress was not well addressed by PTSD treatments but stemmed from violating their own deeply held moral beliefs during combat (13). The concept was later applied to health care, "moral injury describes the challenge of simultaneously knowing what care patients need but being unable to provide it due to constraints that are beyond our control... Moral injury locates the source of distress in a broken system, not a broken individual, and allows us to direct solutions at the causes of distress" (13). Healthcare workers in this study experienced moral distress related to barriers to providing optimal patient care and described few symptoms of depersonalization or compassion fatigue (lack of empathy), commonly mentioned in the literature on burnout (14). Instead, they reported strong levels of solidarity and connection with the community.

Methods

The qualitative approach employed in this study is informed by the investigators' expertise in medical anthropology, rapid methods, qualitative health research, and narrative analysis. The study design invited health care workers to express their understandings of work-related distress in their own words, thereby enabling experience-near and culturally embedded descriptions to emerge. The research was conducted in collaboration between the Pontifical Catholic University of Ponce and Providence College.

Data collection

This study utilizes rapid qualitative methods (15,16,17,18) to analyze the experiences of burnout and moral injury among healthcare workers undergoing compound disasters in southern

Puerto Rico. Initially developed for short-term research made necessary by emergencies or resource constraints, rapid methods have evolved into a rigorous tool that can be applied under a wide range of research conditions. Rapid methodologies are well suited to studying healthcare organizations with the aim of improving the organization and management of medical services and addressing disasters (15,16). The rapid timeframe is enabled by extensive training and preparation, focused and narrow research questions, and the co-occurrence of data collection and analysis (16,17,18).

Over three weeks in June 2024, the team of ten undergraduate researchers and three faculty mentors visited a federally qualified community health center in southern Puerto Rico and its satellite clinics, two schools of nursing, and a rural hospital in the mountains, where they conducted observations, informal interviews, and two focus groups. A total of ten healthcare professionals participated in the focus groups, with five in each session, and approximately 25 additional healthcare professionals participated via informal interviews (see Table 1). The sample included nurses, psychologists, physicians, social workers, and health care administrators. The research questions (Table 2) centered on the experience of burnout during compound disasters. The project (IRB-FY24-69) was reviewed by the Institutional Review Board at Providence College and deemed exempt.

Qualitative analysis

The team created a data collection and analysis tool modeled on the RREAL sheet developed by the Rapid Research Evaluation and Appraisal Lab at University College London (18). This tool is a table-based analysis method that allows multiple researchers to analyze and interpret a data set consistently to identify key themes and trends. It is also useful for reducing and refining large data sets (18). Multiple researchers took notes on the observations, interviews, and focus groups. These notes were combined and entered into the shared RREAL sheet and subsequently analyzed. Over the course of one in-person session with all 13 researchers and five 75-minute Zoom calls with half of the group, the team reduced the findings by reviewing and organizing the notes thematically, identified themes and patterns, and sought consensus on how to

Table 1. Participants by Occupation

Focus Groups	
Nurse Supervisor	3
Physician	2
Psychologist	2
Social Worker	2
Administrator	1
Total	10
Informal interviews	
Occupations	Nurses, physicians, and staff
Clinical Specialty	Family medicine/primary care, urgent care, pediatrics, ob-gyn, chronic conditions, and behavioral health
Total	25

Table 2. Guide to Data Collection and Analysis. Burnout in the Puerto Rican Health System

Instructions: Record major themes/findings that answer each research question. If the theme is already there, no need to repeat it, but you can add an X next to the item each time it occurs in your interactions. If you come across a particularly compelling quote or phrase, take notes and write it down as best you can. This is a group shared document and we will all be adding our findings. After data collection concludes, the team will meet to discuss the findings and refine the tool.

Burnout		
Research Questions	Findings	Notes/Quotes
Have you experienced burnout related to your job as a health care worker? How does burnout show up for you?		
Has working through multiple disasters influenced your burnout?		
What gives you energy and who supports you as a health professional?		
How can institutions (such as your workplace and government) better support health workers?		
Other findings		
Adapted from the RREAL Sheet (18)		

apply concepts from the literature to interpret the results. This collaborative form of analysis solicits multiple perspectives from team members and harnesses the insights from a large research team which is a tool for increasing the validity of study findings.

Limitations

The study has several limitations. The research was conducted over a three-week period and involved a small sample size. The findings are shaped by the characteristics of the participants who were mostly supervisors and managers which limits generalizability. Participants were actively working in health care in 2024, so providers who had migrated or left the workforce were not included. Additionally, the focus groups and informal interviews were conducted at the workplace which may have influenced some responses. Respondents tended to comment on their personal feelings or report on those of colleagues and refrained from criticizing their workplaces directly. These limitations were partially offset by leveraging the lead researchers' deep familiarity with the study location and topic; extensive preparation for the project including a pre-site visit and remote meetings; and post trip analysis meetings.

Results

Descriptions of Symptoms and Causes

In two focus groups and dozens of informal interviews, healthcare workers in southern Puerto Rico identified instances when they felt physically and mentally exhausted. They attributed their work-related distress to overwork, obstacles in providing care, and feeling torn between their home and work roles.

When asked if they had experienced burnout (*agotamiento*), they reported irritation, frustration, sadness, extreme tiredness, lack of

focus, and a sense of paralysis. While some emphasized the importance of naming and openly discussing burnout, others managed negative work-related emotions by suppressing these feelings and trying to be strong. One nurse supervisor described this strategy: "No hay tiempo para agotarse; hacer un 'switch' y apagar ese botón cuando estamos cansados para seguir trabajando y animando a los demás." ("There is no time to get burned out; we have to switch it up and hit the off button when we are too tired in order to continue working and lifting others up"). Another nurse who directed an outpatient clinic reported, for example, "el burnout existe, no lo identificamos pero sí lo sientes cuando tu cuerpo no quiere levantarse de la cama." ("Burnout exists, we don't realize it but yes you feel it when your body doesn't want to get out of bed").

Working long hours in disaster and pandemic conditions contributed to exhaustion, but another important source of distress occurred when providers were unable to deliver the care that patients needed because of health system constraints like specialist shortages or

lack of transportation. Bureaucratic obstacles when coordinating care for patients, such as transfer rejections, insurance denials, and most consistently the lack of specialists, also contributed to the emotional distress that healthcare professionals faced. A psychologist expressed frustration that their patients were unable to receive needed care and attributed this to discrimination against the poor and those from rural areas. The psychologist's moral distress was expressed as frustration and anger rather than exhaustion.

Influence of Compound Disasters

Disasters like Hurricane Maria and the earthquakes stretched healthcare workers by requiring them to learn new skills, quickly perform tasks they were not trained to do (such as meeting basic needs for shelter and food instead of providing clinical care), and improvise in uncertain situations. In the case of the pandemic, new forms of isolation required providers to take on difficult emotional work, such as comforting patients who were not allowed family visits.

Puerto Rico has experienced compound disasters which prevent health care workers from fully recovering and recharging before the next crisis strikes. Some healthcare workers in the focus group expressed concern that exhaustion can manifest in negative work behaviors, especially when providers suppress their emotions instead of recognizing and processing them. A psychologist who took part in a focus group explained one barrier to relying on self-diagnosis as the pathway to help-seeking: "todavía somos muy conservadores; todavía hay tabú para buscar ayuda psicológica. Somos primero rescatistas. Buscar esa ayuda es vergonzoso" ("We are still very conservative; there is still a stigma around seeking psychological help. We are rescuers first. Seeking that help is seen as shameful").

Compound disasters also contributed to emotional turmoil when health care workers had unmet needs at home. Anxiety and worry about family members were particularly pronounced during disasters when communication was unavailable, power went out, roads were blocked or inaccessible, and other basic necessities like food, water, and fuel were scarce. Multiple, overlapping disasters increased the frequency of power outages, school closures, and transportation disruptions which all put additional stress on health care workers.

Sources of Strength and Support

Healthcare workers recognized sources of strength and resilience within themselves, their families, communities, and workplaces. They described a strong sense of purpose that gave meaning to their work and protected them from burnout. This purpose was tied to their relationships with patients, who were described as family, a source of motivation, and their reason for being: “Yo me alimentaba con el agradecimiento de los pacientes,” (“My patients’ gratitude nourished me”) said one doctor. Others were inspired and energized by their families and connections to the community. Nearly all respondents alluded to loving care work and serving and helping others. Connections to colleagues and pride in their workplaces also provided inspiration and motivation. Many providers described attempts to compartmentalize their work life from their personal and family life, though they acknowledged that this was difficult to achieve in practice. For some, their religious faith was a source of strength and helped them recharge from exhaustion. Several participants described how working through multiple disasters had taught them how to respond more quickly to the next one.

Despite the challenges of compound disasters, respondents reported that they felt “satisfacción más que el cansancio” (“satisfaction more than exhaustion”), and that the community’s gratitude and generosity was a source of energy and strength. An emergency room physician explained: “No me faltó el café” (“I never lacked for coffee”); “Los puertorriqueños son muy agradecidos” (“Puerto Ricans are very grateful”); “No importa lo cansado, lo débil, lo más importante es salvar la vida del paciente” (“It doesn’t matter how tired or weak (you feel), the most important thing is to save the life of the patient”).

The strength of community and familial bonds enabled Puerto Rican healthcare workers to continue their work through successive disasters. One doctor expressed it with statements such as: “Los pacientes son familia” (“Patients are family”) and another doctor and operations director expressed “Mi norte son los pacientes, por ellos estamos aquí y estamos comprometidos” (“My guiding principle is the patients; they are why we are here, and we are committed to them”).

Recommendations

Healthcare workers made recommendations aimed at improving their well-being and protecting their ability to respond to ongoing disaster conditions. Most of the recommendations addressed systemic issues with the healthcare system, such as increasing access to specialty care, integrating levels of care, facilitating transfers to more acute settings, reducing the ability of insurance companies and pharmacy benefit managers (PBMs)

to deny care, and creating a stronger and more collaborative Department of Health in Puerto Rico. Healthcare workers also suggested improving transportation for rural residents and creating incentives to train and retain healthcare professionals on the island. Salary increases and better working conditions were deemed important, including shorter shifts, time to rest, and a greater understanding of workers’ responsibilities at home. They advocated for funding mental health programs during disasters and allocating more resources for older adults and people with disabilities. Finally, participants recommended creating mechanisms for healthcare workers to actively participate in decision-making. They emphasized that changes should preserve the culturally distinct aspects of care in Puerto Rico, prioritize connection with patients and community, and center on human warmth (*calor humano*).

Discussion

According to the National Academies definition of burnout, the syndrome has three components: exhaustion, depersonalization, and low work related accomplishment (7). Health care workers’ responses in this study corroborate some symptoms of burnout, particularly work-related exhaustion. However, the full range of burnout symptoms were not reported, such as depersonalization and low sense of personal accomplishment (10,14,22). Instead, participants reported high levels of connection with their co-workers and patients and found meaning and purpose in their work.

Survey research using validated scales for burnout syndrome has found high levels of burnout in Puerto Rico among physicians and nurses (9). One merit of our approach is that it allows health care workers to define their symptoms in their own words. The high levels of compassion and presence of protective factors like community solidarity that we found reinforce results from other qualitative studies that used more extensive sampling (19) and survey research that employed multiple scales (20). Our analysis aligns with other studies that found that adopting the patients’ perspective creates more meaningful connections and helps foster community resilience (14). On a community level, compassion motivated health care workers to provide services and improve access during disasters. This is a community asset that should be recognized and fostered by disaster planners and policymakers (23).

While some features of burnout were present, we found that work related exhaustion co-occurred with moral injury. After disasters such as Hurricane Maria, the roles of healthcare workers shifted to attend to peoples’ basic needs and devise workarounds for offline systems. During compound disasters, workloads and expectations increased (19), resources and supplies were limited, and technological issues, like the pivot to telemedicine, during COVID caused frustration. Although sentiments like exhaustion, frustration, and isolation were expressed, the inability to meet patients’ needs should also be understood as moral injury since healthcare professionals are prevented from giving the care that patients deserve and that they are trained to deliver (13,19).

Distinguishing between burnout and moral injury has important implications for solutions and interventions. Self-

help and research sources abound that advise treating burnout via breaks from work, mindfulness, self-care, relaxation, yoga, spending time with family, or attending wellness programs (24). Participants in this study reported using many of these techniques, such as swimming, spending time on social media, meditation, and enjoying time with family. Some attempted to cordon off work stress from family life by treating home as a sanctuary from work problems, but this strategy also limited their opportunity to process and talk about their emotions. Recognizing and naming negative work-related emotions is critical to implementing self-help strategies in a timely manner. Institutional culture and mission that overemphasizes the need to be a hero can stigmatize providers' expressions of vulnerability (26). Future research could examine the role of suppressing emotions and the need to create spaces for processing complex work-related distress.

Though they may relieve some burnout symptoms, individualized and short-term solutions are insufficient remedies for moral injury. The NAM recommends comprehensive and systems-based solutions for underlying causes (7). Other research has found that when clinicians communicate and advocate for addressing the structural problems causing moral injury, it helps them cope (25). The structural solutions suggested by healthcare workers in this study are more likely to provide long-term relief from moral injury: remedying access barriers, addressing the provider shortage, and developing work policies that are mindful of the provider's family and community responsibilities. These solutions complement the recommendations developed by Garriga-López and colleagues to improve salaries, working hours, and benefits; create equitable and participatory policies; develop a national plan for retention and training of health professionals; include health workers in disaster planning, and regulate the insurance industry (19). While some aspects of local culture were criticized such as mental health stigma, study participants also emphasized sustaining the cultural strengths of the healthcare workforce and local institutions. They advocated prioritizing connection with patients, recognizing local knowledge, respectful awareness of socioeconomic constraints, and treating staff and patients as family. Less paternalistic and more effective and collaborative relations with state agencies were also mentioned.

Through qualitative methods that invited health care workers to describe their experiences of work related distress in their own words, we learned that they have developed coping mechanisms through strong community bonds to mitigate the effects of compound disasters. Providers described themselves as attending family members or becoming "family" through the deep connections they established. For some study participants the family bonds were literal as they served their natal communities. Health care workers drew resilience and motivation from the community's gratitude, expressed through simple yet meaningful gestures, such as offering a cup of coffee during difficult times. Their guiding principle (or "norte") was their ability to help and build trust which became a source of nourishment and their primary motivation. However, it is these same strong community connections that can lead to moral injury as providers feel that their basic ethical codes are violated when shortcomings in the health care system lead to suboptimal patient care.

Resumen

Objetivos: Identificar cómo los trabajadores de la salud experimentaron estrés laboral durante los desastres compuestos en Puerto Rico. **Métodos:** Durante un período de tres semanas, diez estudiantes y tres profesores visitaron ocho instituciones médicas en Puerto Rico para llevar a cabo observaciones, entrevistas informales y dos grupos focales utilizando el método de investigación cualitativa rápida. Los investigadores tomaron notas en una tabla RREAL que les permitió organizar, revisar y analizar colectivamente los hallazgos. **Resultados:** Los participantes reportaron síntomas como cansancio físico, agotamiento emocional y frustración. También se observaron altos niveles de compasión. Los investigadores aplican los conceptos de agotamiento y daño moral para entender cómo las condiciones en deterioro y los desastres prolongados generan estos conflictos emocionales. El malestar moral surgió cuando los profesionales de la salud no podían satisfacer las necesidades de los pacientes debido a la escasez de proveedores, la limitación de recursos y el fragmentado sistema de salud. Asimismo, los investigadores utilizan el concepto de daño moral para entender cómo estas deterioradas condiciones y los desastres prolongados producen angustia moral y emocional. Además, los trabajadores de la salud experimentaron conflictos entre sus responsabilidades laborales y sus roles familiares. Aunque se identificaron algunos síntomas de agotamiento (por ejemplo cansancio extremo), también se observaron altos niveles de compasión. Sostenemos que es a partir de los vínculos sólidos que se establecen con las comunidades y pacientes que los trabajadores de la salud fomentan la resiliencia y se protegen de una completa manifestación de los síntomas de agotamiento. Sin embargo, estos mismos fuertes lazos comunitarios pueden dar lugar a la aparición de daño moral. **Conclusiones:** El agotamiento y el daño moral coexisten en los trabajadores de la salud cuando no pueden brindar los mejores servicios al paciente debido al impacto provocado por los desastres compuestos prolongados y las deficiencias en el sistema de salud.

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