

The front line of health care during the climate-related flood event in Rio Grande do Sul in May 2024

A linha de frente do atendimento em saúde no evento climático de inundação no Rio Grande do Sul em maio de 2024

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Introduction

In May 2024, the state of Rio Grande do Sul was the scene of one of the most devastating tragedies in its history.

According to the State Office of Civil Defense, 478 cities were affected, with 2,398,255 people affected across the state, 806 injured, 27 reported missing, and 183 confirmed dead, as stated in the latest report released in August 2024 (1).

In the face of tragedies of that magnitude, the rapid and coordinated mobilization of civil society and government institutions at all levels is essential. Universities immediately joined these efforts and mobilized their resources, as they have done during the COVID-19 pandemic and other critical situations.

The aim of this paper is to present the experience of the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA) during the floods that occurred in Rio Grande do Sul in May 2024, reflecting on the outcomes of the actions taken, the lessons learned, and future perspectives.

Methods

This report describes the actions conducted by UFCSPA in the city of Porto Alegre, a city of over 1.3 million inhabitants and the capital of the state of Rio Grande do Sul, Brazil. Such actions took place throughout May 2024, when the state was affected by exceptionally high rainfall at the end of April and beginning of May, resulting in the most severe climate-related disaster in the history of Rio Grande do Sul (2).

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UFCSPA is a public institution of higher education, research, and community outreach. It offers 16 undergraduate programs, 64 medical residency programs, four residency programs in health professional areas – both uniprofessional and multiprofessional – nine specialization courses, and 12 *stricto sensu* graduate programs.

The UFCSPA faculty includes 339 professors with doctoral degrees, 26 with master's degrees, and eight with specialist degrees. The administrative and technical staff includes seven individuals with doctoral degrees, 30 with master's degrees, 87 specialists, 54 with undergraduate degrees, and 29 with a college diploma. More than 5,000 students are enrolled in its in-person and distance learning programs (3).

Experience report and results

From the moment initial reports indicated that an extraordinary climate event was unfolding – one that would require exceptional human resources to meet the challenges ahead – the UFCSPA administration offered its support to the Municipal Health Department of Porto Alegre. Under the Department's coordination, the University committed to providing all available resources to help meet the anticipated demands.

As the rains began and the water levels rose, Porto Alegre was gradually engulfed by flooding. It soon became clear that the scale of the disaster would far exceed anything that had been experienced before. Emergency shelters were quickly set up and people began arriving with a wide range of health care needs.

UFCSPA, along with other institutions, was called upon to serve on the front lines of health care in shelters for individuals rescued from the floods that struck Rio Grande do Sul in May 2024.

A crisis committee was initially established to assess, on-site, the context in which the

university would operate. Shelter visits were conducted on May 4, 2024, under the guidance of the Municipal Health Department.

On May 3, UFCSPA was designated to support the health care of individuals housed in what would become one of the largest shelters in Porto Alegre, accommodating over 600 people and a large number of volunteers addressing a wide range of needs. In response to this demand and recognizing the urgency of the situation, the first step was to establish a basic plan and rapidly organize leadership across different areas, as well as a team of volunteers made up of members from both the internal and external UFCSPA community.

It was a rapidly evolving crisis. Workflows, routines, and strategies to address emerging challenges were developed in real time as new scenarios unfolded. Recognizing the need for a large number of volunteers, a registration form was created for those wishing to join the climate response efforts, and within a short time, hundreds of students, faculty, and staff signed up to participate, which resulted in several work fronts (Chart 1).

In this first large shelter, there were people from all backgrounds and of all ages – from 5 days to 101 years old – with a wide range of needs and diverse, specific health demands. On Monday, May 6, the team organized and implemented two nursing and medical care stations, a mental health care station, and a pharmacy for medication dispensing within the shelter.

As there were many families with children, it quickly became apparent that age-specific activities would be needed. As a result, on the second day, structured recreational activities – especially for children – were initiated to support those housed in the shelter.

Multi-professional teams working in shifts provided health care for 12 hours each day. Final-year students conducted consultations under the supervision of professionals in their respective fields. The primary health issues

addressed included decompensation of chronic diseases in adults, reestablishment of regular use of continuous medications, care for pregnant women and newborns, provision of supportive measures such as oxygen therapy, treatment of minor injuries and infections, review and updating of vaccination status, and both treatment and prophylaxis of infections commonly associated with this type of emergency situation.

This shelter became a pioneer in several procedures developed to support the Municipal Health Department, including conducting the heel prick screening test for newborns and establishing a protocol for the safe disposal of sharps waste from shelters. Complex cases were also managed, such as the handling and dispensing of HIV medications, care for high-risk pregnant women, and support for transplant recipients.

After just a few days, the situation worsened. Porto Alegre and the metropolitan area were severely affected by the rising waters, and more people were forced to abandon their homes and had to be rescued from other parts of the city. Many health services had been impacted – several health units were flooded,

and others had teams that were displaced or overwhelmed by the extraordinary number of victims and people in need of care.

A mapping of the population profile and their needs was conducted. Gradually, the response efforts were divided into specific areas of work. Health care services were provided across all fields, including medical care, nursing, pharmacy, psychology, speech therapy, nutrition, physiotherapy, health management, and education.

A physical medical record system was developed and transcribed daily into digital format to ensure the quality and safety of the information. Multiple follow-up consultations were conducted, and individual patient information could be retrieved when needed. Additionally, these records were shared with primary health care units as services were gradually restored and whenever necessary to ensure continuity of care.

In parallel with the organization of health care services within the shelter, a rescue zone was established at an overpass in the northern part of the city, where displaced individuals were arriving. This location became one of the main sites for water rescues, with people being

Chart 1. UFCSPA's participation

<ul style="list-style-type: none"> • 3 shelters <ul style="list-style-type: none"> - 1 general shelter (capacity to serve approximately 600 people) - 1 shelter exclusively for women (capacity to serve approximately 50 people) - 1 shelter for mothers with children (capacity to serve approximately 60 people)
<ul style="list-style-type: none"> • 1 reception and care site for individuals rescued from the floods (José Eduardo Utzig Overpass), staffed by nursing, medical, psychological, and pharmaceutical teams, along with support volunteers
<ul style="list-style-type: none"> • 380 individuals received emergency care within the shelters, with medical records documented (more services in the reception area located at the overpass in partnership with other groups and institutions)
<ul style="list-style-type: none"> • 130 individuals received follow-up care after the initial consultation
<ul style="list-style-type: none"> • 140 UFCSPA faculty members, technical-administrative staff, UFCSPA students and students from other institutions, and volunteer health professionals
<ul style="list-style-type: none"> • More than 1,000 volunteers coordinated through a WhatsApp group to organize actions and work fronts
<ul style="list-style-type: none"> • A center for the management of needs and resources within the UFCSPA's central campus, with staff engaged in multiple areas of response

UFCSPA = Universidade Federal de Ciências da Saúde de Porto Alegre.

transported by boats, jet skis, inflatable rafts, and other watercraft.

At the request of the Secretary of Health, UFCSPA teams were quickly mobilized to assist in caring for individuals arriving at this site in a wide range of physical and emotional conditions. The first step was to organize members of UFCSPA's Academic Trauma League and several medical faculty members to provide care in the improvised tents that had begun to appear at the location. As it became evident that the situation required structured teams of intensivist and emergency medicine volunteer physicians – since the scale of need far exceeded initial expectations – local medical organizations were asked to designate specialist professionals to lead this effort. They responded promptly, mobilizing several groups from related fields. Such an initiative was later expanded to other locations where water-rescued individuals were arriving.

Spontaneous care initiatives were already underway at this overpass, near the bus stop, where conditions for providing assistance were more viable and supported by a range of additional services. These actions proved to be extremely important and included ambulance support, assistance from security forces, and volunteer-led efforts to receive and distribute water, food, medications, and clothing. They also involved organizing transportation and shelter for the arriving individuals as well as the reception and care of numerous animals that had also been rescued. UFCSPA participated in the care efforts at this site until May 12, 2024, alongside countless volunteers from various regions, institutions, and initiatives. Intensivist and emergency physicians, working in shifts, were responsible for providing urgent medical care, while faculty members and students supported and participated in various forms of reception and care. Groups of health professionals came together and tirelessly provided services within their areas of expertise. Nurses, Pharmacists, Physical

Therapists, Physicians, Psychologists, and many others organized themselves spontaneously and often redundantly. At this site, care was provided continuously by multiple independent yet coordinated teams from different locations.

A reception routine was created in which the rescued person was received after being pulled out of the water, the need for emergency medical attention was assessed for hypothermia, serious injuries, fractures, or signs of clinical instability, and, in this case, the first support was given in a dedicated environment or by the ambulances that were on site. Or it was identified that it wasn't an emergency, and the person was taken to the reception area, where they would see a doctor and/or nurse and then be welcomed by a support team of volunteers who had organized themselves spontaneously. These people were sent to change clothes, receive water and food, find family members or shelters, and care for pets.

Given UFCSPA's institutional profile, in the days following the initial response, teams were also organized to coordinate and sustain health care services in shelters hosting specific populations, such as women-only shelters and shelters for women with children. In these settings, multidisciplinary care was essential. Mental health services were particularly critical. Psychiatrists, psychiatry residents under supervision, faculty members from the Psychology Program and their students, as well as volunteer psychologists, collaboratively addressed the demand and provided support throughout the 12-h shifts spent at the shelters. This type of care was also extended to the reception area at the overpass, where offering psychological support to rescue workers and volunteers proved to be equally essential. Recreational interventions, especially for children and youth of all ages, were found to be highly effective. Such experiences enabled the development of playful strategies for working through crisis situations.

After the first 10 to 15 days (Figure 1), the response transitioned into subsequent phases of care organization. It became essential to establish routines and, as much as possible, reintroduce elements of normalcy. Sheltered individuals were gradually relocated to medium- and long-term shelters. Many were taken in by family members or returned to their homes as weather conditions improved and water levels reached safer levels. Health care, which had initially been provided around the clock (12–24 h), began

to shift toward a primary care approach, in partnership with the primary health care units (UBSs) associated with the shelter areas. Several collaborative efforts with UBS teams enabled a safe and coordinated transition of care, helping to avoid the “medicalization” of distress.

During this phase, various UFCSPA programs also developed specialized protocols to support care in other shelters – such as guidelines for managing patients receiving enteral nutrition.

CHRONOLOGY OF UFCSPA’S FRONTLINE RESPONSE

A brief account of the Federal University of Health Sciences’ involvement

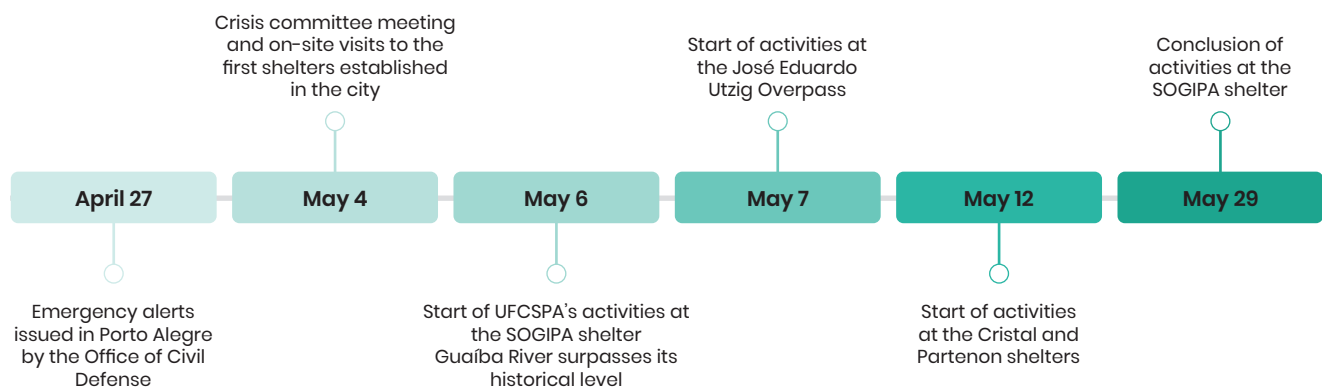


Figure 1. Chronology of UFCSPA’s frontline response

SOGIPA = Sociedade de Ginástica Porto Alegre; UFCSPA = Universidade Federal de Ciências da Saúde de Porto Alegre.

Discussion

Experiencing a crisis of this magnitude highlights the critical importance of integrated health care actions. Keeping professionals articulated, mapping needs, recognizing the uniqueness of the situation and reassessing conduct and decisions at all times is fundamental.

Only a small number of cases required hospitalization or specialized care. By applying a technical health care approach focused on risk stratification, assessment of clinical

severity, and anticipation of conditions that could potentially evolve into emergencies, it was possible to maintain safe and appropriate care throughout the response.

Maintaining clear and continuous communication and aligning initiatives with public authorities helps optimize resources, improve the quality of care, and support the training of professionals for future crisis situations.

Based on this experience, UFCSPA initiated the development of a Disaster and Health Response and Study Center (4,5), aimed at

promoting research, training, and disaster response with a focus on public health and impact mitigation. In this way, UFCSPA fulfills its mission of contributing to society through education, research, and community outreach. The center's first initiatives will include offering courses and events focused on understanding the dynamics and consequences of disasters as well as exploring how the university can collaborate with other institutions in crisis response using an evidence-based, up-to-date approach that engages multiple sectors and fields of expertise.

During the 2024 climate flood in Rio Grande do Sul, the volunteer efforts by UFCSPA students, teachers, and staff demonstrated the importance of social mobilization in crises.

The emergency, health care, and psychosocial support offered by these volunteers were essential in mitigating the humanitarian and health impacts of the tragedy. With diverse backgrounds, they carried out the need for screening, organized shelters, and provided medical care, ensuring an interdisciplinary, efficient, and culturally sensitive response. By strengthening the ties between university and society, UFCSPA's example illustrates how volunteering alleviates immediate suffering and builds collective resilience in the face of climate adversity.

CONFLICTS OF INTEREST: The authors declare no conflicts of interest.

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