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Experience report

Prenatal care during floods in the South: an experience report from health management*

Pré-natal em situação das enchentes no Sul: relato de experiência da gestão em saúde

Atención prenatal durante las inundaciones en el Sur: un informe de la experiencia de la gerencia de salud

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Abstract

Objective: to report the experience of providing care to pregnant women during the climate event caused by flooding in a municipality in southern Brazil. **Methods:** an experience report developed by Primary Health Care nurses working with pregnant women from May to July 2024. The experience involved approximately 100 pregnant women whose homes were affected by the flooding and highlighted the strategies used to ensure continuity of prenatal care, the main challenges faced, and the lessons learned for health management in disaster contexts**. Results**: The process revealed the importance of itinerant care, reorganization of care flows, the use of communication technologies, and intersectoral coordination to guarantee comprehensive care for pregnant women in vulnerable situations. **Conclusion:** The qualified performance of the teams and the flexibility of the services are fundamental to ensuring comprehensive care in disaster situations, making the inclusion of specific protocols in public health policies aimed at emergencies essential.
Descriptors: Disasters; Rain; Health Management; Public Health; Prenatal Care

Resumo

Objetivo: relatar a experiência vivenciada no cuidado às gestantes durante o evento climático provocado pela enchente, em um município do Sul do Brasil. **Métodos**: relato da experiência desenvolvido por enfermeiras da Atenção Primária à Saúde junto às gestantes, de maio a julho de 2024. A experiência envolveu, aproximadamente, 100 gestantes que tiveram sua moradia atingida pela enchente, e evidenciou as estratégias para assegurar a continuidade do pré-natal, os principais desafios, além dos aprendizados adquiridos para a gestão em saúde em contextos de desastre. **Resultados**: o processo revelou a importância da atuação itinerante, da

reorganização dos fluxos assistenciais, do uso de tecnologias de comunicação e articulação intersetorial para garantir o cuidado integral às gestantes em condição de vulnerabilidade. **Conclusão**: a atuação qualificada das equipes e a flexibilidade dos serviços são fundamentais para assegurar o cuidado integral em situações de desastre, sendo imprescindível a inclusão de protocolos específicos nas políticas públicas de saúde direcionados a situações de emergência.
Descritores: Desastres; Chuva; Gestão em Saúde; Saúde Pública; Cuidado Pré-Natal

Resumen

Objetivo: Reportar la experiencia de atención a mujeres embarazadas durante el evento climático causado por inundaciones en un municipio del sur de Brasil. **Métodos:** Se presenta la experiencia desarrollada por enfermeras de atención primaria de salud con mujeres embarazadas de mayo a julio de 2024. La experiencia involucró a aproximadamente 100 mujeres embarazadas cuyos hogares se vieron afectados por la inundación y destacó las estrategias para garantizar la continuidad de la atención prenatal, los principales desafíos y las lecciones aprendidas para la gestión de la salud en contextos de desastre. **Resultados:** El proceso reveló la importancia de la acción itinerante, la reorganización de los flujos de atención, el uso de tecnologías de la comunicación y la articulación intersectorial para garantizar la atención integral a las mujeres embarazadas en situación de vulnerabilidad. **Conclusión:** El desempeño calificado de los equipos y la flexibilidad de los servicios son fundamentales para garantizar la atención integral en situaciones de desastre, y es esencial la inclusión de protocolos específicos en las políticas de salud pública dirigidas a situaciones de emergencia.
Descriptores: Desastres; Lluvia; Gestión en Salud; Salud Pública; Atención Prenatal

Introduction

The impacts of climate change, previously projected to occur in the coming decades, have arrived sooner than expected. In the first months of 2024, countries in Africa (Kenya) and Asia (Indonesia, Afghanistan) suffered floods. In May, in Brazil, the rains caused the biggest tragedy in the history of the state of Rio Grande do Sul (RS) and one of the biggest in the country.[1]

Between April 27 and May 5, RS was hit by rainfall that, in some regions, approached 250mm in a single day, accumulating, in less than a week, half of the recorded annual historical mean.[2] Of a total of 497 municipalities, 452 were affected, and 46 were classified as being in a state of calamity, directly affecting more than two million people.[3]

Events of this magnitude have diverse causes and produce multidimensional effects. In the national context, several natural disasters have already been experienced, whether of meteorological origin (cyclones and extreme temperatures), geological (landslides), climatological (droughts and wildfires), or hydrological (flooding and inundations).[4]

Floods are among the natural disasters characterized by high frequency, being responsible for a large proportion of damage to public health, housing, and the living conditions of communities and societies.[5] These situations require an immediate response in terms of human resources, as well as preparation, planning, and recovery across different sectors, including the health care system.[6]

The health impacts of floods may occur directly or indirectly, with short-, medium-, and long-term effects, affecting individuals and communities and constituting a significant public health problem. The most vulnerable groups include children, older adults, people with disabilities, and pregnant women.[7]

Regarding pregnancy, this period represents a significant stage in a woman's life, marked by intense physiological and emotional changes. Therefore, prenatal care is essential for promoting the health of the mother and baby, being indispensable for identifying and managing possible complications. In certain circumstances, pregnancy may be considered high-risk, especially when preexisting medical conditions or intercurrent events during gestation increase the chances of maternal and/or fetal morbidity.[8]

The World Health Organization defines prenatal care as a set of actions and procedures carried out by health professionals with the aim of promoting health and reducing maternal and child morbidity and mortality rates. To this end, a health-promotion–centered approach is recommended, enabling the early identification of risks and conditions that may compromise the course of pregnancy.[9]

In the Brazilian context, prenatal care is a programmatic action of Primary Health Care (PHC), guided by public policies and guidelines that orient practices within the Unified Health System (SUS). It is the responsibility of the State to ensure quality, equitable, universal, and comprehensive care.[10] Therefore, it is essential that health professionals provide qualified support to pregnant women in order to reduce risks and promote adherence to prenatal monitoring.[11]

It is important to highlight that, in disaster contexts, it becomes essential for health management to develop strategies that ensure the continuity and quality of prenatal care, considering the specificities and needs of pregnant women. In light of the above, this study seeks to present the experience of providing care to pregnant

women during the emergency caused by flooding, highlighting the strategies adopted to ensure the continuity of prenatal care, the main challenges faced, and the lessons learned for health management in disaster contexts. Thus, the objective is to report the experience of caring for pregnant women during the climate event caused by flooding in a municipality in southern Brazil.

Method

Study design

This is a descriptive report of the care provided to pregnant women during prenatal care during the flood that occurred in May 2024. The monitoring extended until July of the same year, when these women returned to care in their communities, initially in temporary spaces—tents, schools, community centers, and gymnasiums—until the gradual reopening of health units.

Location and context of the study

The experience took place in the municipality of Canoas, located in the metropolitan region of Porto Alegre, in the state of Rio Grande do Sul (RS). It originated from the author's direct experience, along with a team of six nurses. All were mobilized by the urgency of the situation, their technical training, and their prior connection with the affected population, as they already worked in primary health care in the affected territory.

Canoas is a large municipality located in the metropolitan region of Porto Alegre, the capital of the state of RS, with which it shares a border. It has a territorial area of 130,789 km^2 and an estimated population of 349,728 inhabitants in 2022, being the second most populous city in the metropolitan region and the fourth in the State.

The municipality has full management of health, being responsible for the administrative, technical, assistance and financial aspects of the local public system. It is also a reference for 154 municipalities, organized by specialties, according to inter-federative agreements.

The health network in Canoas/RS is structured by the Canoas Municipal Health Foundation (FMSC) and the Municipal Health Department, which work together to guarantee the population's access to health services. The network covers both primary health care units and specialized services, including medical and dental specialty centers.

Administratively, the municipality of Canoas is divided into five quadrants — Northeast, Northwest, Southeast, Southwest and Center. The Southwest and Northwest quadrants were severely affected by the floods. The flooding resulted in significant losses for the municipal health network, including the interruption of activities in 19 Health Units (HU), three Emergency Care Units (ECUs), and municipal pharmacies, in addition to the total structural and care compromise of the Emergency Hospital (EH).

Study population

The study population consisted of approximately 100 women sheltered in temporary accommodations, who were at different stages of pregnancy, including the puerperal period, and presented needs ranging from clinical prenatal monitoring to the need for emotional support.

The flood resulted in the temporary loss of territorial reference, which required the nursing team to readjust its processes for identifying and monitoring these users. Before the flood, the monitoring of pregnant women was carried out through PHC monitoring spreadsheets and electronic medical record entries, which made it possible to understand users' profiles, assess risks, and organize longitudinal care.

With the evacuation of the population from the flooded areas and the consequent interruption of services in the affected units, active search for the pregnant women became necessary. The strategy of the nursing team moving through the shelters made it possible to identify pregnant women who already had prior monitoring and those who were not yet linked to the services. Based on this identification, access to the electronic medical records was carried out, which enabled the retrieval of information from previous consultations and, consequently, the continuity of prenatal care.

Care scenario

Based on the survey of the number of homeless pregnant women, a new specific monitoring spreadsheet was developed to organize clinical information, priority needs, place of stay, and care flows. This systematization allowed for the continuity of prenatal care, even outside the usual territory, ensuring the monitoring of maternal health status and referral to reference units according to the situation of each case.

The care provided to pregnant women was daily, according to the needs identified in each shelter. With the decrease in water levels and the return of families to their homes, care began to take place in the homes, which ensured the continuity of clinical monitoring and the gradual re-establishment of the link with the care territory.

Ethical Aspects

Because this is an experience report, this research does not require an opinion from the Research Ethics Committee with Human Beings.

Results

This experience began in a context marked by chaos, the absence of structured protocols, and the initial disarray of disaster response actions. Despite this adverse scenario, a collective mobilization effort was undertaken, involving volunteers and professionals, who worked together to develop strategies to mitigate the impacts of the calamity and ensure support for the affected populations.

As rescue efforts progressed, several emergency shelters were established in areas of the municipality that had not been directly impacted by the floods. Initially, 98 shelters were officially counted. However, subsequent surveys identified 120 shelter structures, both institutional and community-based initiatives, many of them organized spontaneously in response to the urgency and scale of the crisis.

The actions to ensure the continuity of care were developed based on the need for a rapid reorganization of the healthcare network in response to the disruption of services in their reference territories. Considering the worsening of social, economic, and health vulnerabilities resulting from climate-related disasters, the establishment of

a Working Group composed of six nurses assumed the coordination of care for pregnant women experiencing homelessness.

According to the records in the monitoring spreadsheet linked to the municipality's Maternal and Child Health Policy and to the PHC teams, by May 2024, approximately 1,000 pregnant women were being monitored in the Health Units located in the affected areas. As water levels rose, the affected population was evacuated from their homes, relocating to temporary shelters or to the homes of relatives, friends, and neighboring municipalities.

The first strategy implemented was systematic active case-finding in all shelters, through daily visits, aiming to identify pregnant women and recognize new users not previously registered in the service. The itinerant work of these nurses was essential to maintaining health actions and the continuity of care programs, especially prenatal care.

This process resulted in the identification and monitoring of approximately 100 pregnant women, who received continuous care throughout the emergency period. The visits included clinical assessment, vaccination updates, distribution of supplements, guidance on warning signs, and psychosocial support. In addition, the use of WhatsApp proved essential for maintaining continuous communication with the pregnant women, enabling guidance, clarification of doubts, emotional support, and real-time monitoring, especially during periods when mobility was more restricted.

Concurrently, a monitoring spreadsheet was developed to enable updated recording of the identified pregnant women, their location, and the status of their prenatal monitoring. In coordination with the municipal electronic medical record, this strategy enabled retrieval of pregnancy history, identification of obstetric risk, monitoring of pending tests, and updating of the vaccination schedule. This action proved particularly effective in reducing gaps in continuity of care and enabling longitudinal monitoring outside the territory.

These actions reveal that, even in a context of calamity, PHC demonstrated adaptive capacity by reorganizing work processes, decentralizing services, and strengthening bonds with users. Added to this effort was the partnership with the SOS Obstetrics Project, formed by obstetric nurses from the University of São Paulo, which provided support to pregnant women, postpartum women, and newborns in the regions

affected by the flooding by offering reproductive and neonatal health services. The activities included obstetric nursing consultations, blood pressure monitoring, fundal height measurement, and auscultation of fetal heart tones, as well as referrals for high-risk prenatal care, ordering of tests, administration of immunobiologicals, prescriptions based on care protocols, and case discussions among professionals.

Interinstitutional action and volunteer engagement were important to ensure effective care, demonstrating that partnerships between professionals from the public network, higher education institutions, and civil society organizations are indispensable in disaster contexts. The importance of longitudinal monitoring of pregnant women and the implementation of immunization and surveillance measures for health problems related to the environmental disaster should also be highlighted, providing another response to the emerging demands of the affected population.

Another concern was the risk of outbreaks of certain diseases—leptospirosis and hepatitis A—due to contamination of people exposed to floodwaters. To address these risks, vaccination campaigns and guidance to the population on sanitation were intensified.

Health units not affected by the flood also began to function as referral points to receive, schedule, and care for pregnant women from the affected areas. Thus, both pregnant women sheltered in collective institutions and those accommodated in the homes of family or friends had access to health services, through coordination with the unit managers.

After more than 20 days, the waters began to recede, and families gradually returned to their homes, allowing for the decentralization of actions from shelters to the homes of pregnant women. The itinerant work of health professionals was a relevant strategy, especially in the return of pregnant women to their homes in the affected areas. The presence of itinerant teams, providing on-site care, administering vaccines, distributing medications, and conducting rapid tests, represented a swift and adapted response to the emergency context.

In parallel, there was an operational reorganization of health services, with the provision of temporary care in tents, schools, community centers, and gymnasiums until the Health Units were reopened. The continued presence of the existing team,

combined with the formation of new teams composed of professionals from the affected health units, contributed to reestablishing the bond between pregnant women and health services—an aspect recognized as essential for the continuity and quality of prenatal care. These strategies, implemented in an adaptive, collaborative, and territorially sensitive manner, proved fundamental for ensuring comprehensive care for pregnant women, even in a critical context.

Among the main challenges were the logistics of transportation between shelters, instability of communication networks and lack of supplies for immediate care, the physical disorganization of health units, the dispersion of pregnant women across different shelters, structural limitations for consultations—especially in improvised spaces—lack of transportation and materials, and the emotional overload of teams. The initial absence of formal workflows also demanded quick decision-making, intersectoral coordination skills, and clinical flexibility. Communication between services was also hindered, especially in the first days, by power and internet outages.

As a lesson learned, teams highlighted the need for municipal contingency plans that include specific protocols for pregnant women, providing, for example, care kits for immediate assistance, structured integration with Civil Defense, and guaranteed remote access to electronic medical records. Furthermore, the experience underscored the central role of nursing leadership, whose actions were essential for reorganizing workflows, mobilizing resources, and sustaining the care bond in a crisis context.

The experience demonstrated that maintaining prenatal care in disaster contexts is feasible when there is rapid mobilization, strategic use of technologies, and interinstitutional coordination. The actions resulted in continued monitoring of all identified pregnant women, reduced maternal complications, and strengthened support networks. This experience reinforces the need for standardized emergency protocols and continuous training of PHC nurses to operate in disaster scenarios, ensuring that care remains a guaranteed right even in extreme situations.

Discussion

Prenatal care is one of the central pillars of the comprehensive women's health care policy in the SUS (Brazilian Unified Health System). It is considered an essential

strategy to promote maternal and child health, prevent gestational complications, and reduce maternal and neonatal mortality.[12]

Primary health care (PHC) is the main entry point to the SUS, as it aims to guarantee assistance at all stages of life, including the gestational period. It also proposes program actions aimed at ensuring health and well-being during pregnancy, delivery, and postpartum, in addition to strategies to reduce maternal and child mortality.[13]

However, in situations of public calamity, such as the 2024 flood in Rio Grande do Sul, PHC services faced disruptions in care processes, requiring rapid reorganization, prioritization of vulnerable groups, and adaptation of care practices. The literature highlights that natural disasters not only produce material losses but also direct and indirect impacts on human health, disproportionately affecting populations with greater social vulnerability,[14] among which are pregnant and postpartum women. These groups may face additional barriers—housing instability, food insecurity, loss of documents, and difficulty accessing health services—and these conditions increase the risks of maternal and infant morbidity and mortality.

The concept of vulnerability, in this sense, should be understood as a social, economic, and institutional condition that limits the ability of individuals or groups to protect themselves and claim their rights.[15] In the field of public health, this concept acquires special relevance when considering populations that face barriers to accessing care services and policies. This implies recognizing that women in vulnerable situations require sensitive and intersectoral actions that go beyond the clinical scope, integrating psychosocial support, community engagement, and empowerment strategies. Such an approach is essential, as it involves reducing individual risks and protecting fetal and neonatal health.

Therefore, pregnant women in situations of social, economic, and/or educational vulnerability tend to experience greater difficulties in accessing, adhering to, and continuing prenatal care. The health team should consider them in a special way, requiring sensitive, equitable, and intersectoral strategies to ensure comprehensive and effective care.

In this context, Primary Health Care (PHC) plays an important role in providing health actions to the population, both individually and collectively, as it encompasses health promotion and protection, disease prevention, diagnosis, treatment, rehabilitation, harm reduction, and health maintenance. It aims to develop comprehensive care that affects the health status and autonomy of individuals, and the determinants and conditions of health in the community. [16]

It is worth noting that, within the scope of PHC, or in adverse territories, in addition to the guidelines already established for prenatal care, care for pregnant women should involve the implementation of emergency strategies, which must ensure comprehensive care, surveillance of obstetric risks, and the provision of psychosocial support, aiming to minimize the negative impacts on maternal and fetal health in contexts of public calamity.

Therefore, it is essential to prioritize specific care actions for this group, considering that, given the context in which they are inserted, there is a greater propensity for the development of a high-risk pregnancy. It is important to highlight that this condition exposes both the fetus and the pregnant woman herself to complications, which can result in increased maternal and fetal mortality rates.[17]

Faced with this scenario of vulnerability aggravated by the calamity situation, the group of nurses from the Primary Health Care network in the municipality of Canoas/RS mobilized in an articulated manner, visiting various shelters in an itinerant way, to identify, screen and provide comprehensive support to pregnant women, in order to minimize adverse impacts on maternal and child health. This action aimed to minimize adverse impacts on maternal and child health and ensure the continuity of prenatal care. To this end, adaptations were necessary in work processes and in the organization of care, in order to ensure comprehensive, equitable and humanized care.

Care for pregnant women should not only encompass the biological process of pregnancy. It is also necessary to consider the psychosocial and spiritual dimensions that permeate the experience of being a woman and being pregnant in disaster contexts.[18]

The literature points out that, in disaster contexts, the interruption of prenatal care is one of the most critical factors for the increase in premature births,

obstetric complications, and maternal psychological distress.[19] Therefore, it is essential to consider not only the technical guidelines for prenatal care, but also technological and intersectoral resources as fundamental elements to guide responses in disaster contexts.

Pregnant women in vulnerable situations are often exposed to additional risks, such as lack of social support and safe living conditions, which negatively influence their health and that of the baby, significantly compromising adherence to and continuity of prenatal care. Limited access to health services, coupled with precarious housing conditions, food insecurity, and low levels of education, contributes to the fragmentation of care and increases maternal and perinatal risks. These women often find it difficult to understand the guidance provided by professionals, access public transportation to health units, or reconcile the commitments of pregnancy with formal and informal work demands.[20]

Thus, maintaining prenatal care requires coordinated responses that integrate public policies, local planning, and professional leadership. The experience of Canoas/RS shows that intersectoral mobilization and the actions of primary health care nurses were crucial in mitigating risks and preserving maternal and child health.

These actions reflect a coordinated response not only to provide emergency care, but also to prevent post-flood diseases, aiming to restore the health of the affected population.[21]

In some municipalities, the implementation of emergency health units—containers or structured tents—has been used as a temporary alternative to avoid the interruption of fixed services and ensure access to basic health care, including prenatal care.[18]

Public calamity occurrences require a rapid response from management, reorganization of care networks, prioritization of vulnerable groups, and adaptation of care practices. Health management must be able to coordinate emergency actions, maintain public policies, and mobilize local, state, and federal resources. It should also activate community attributes, solidarity initiatives, and intersectoral coordination to support the population in its various vulnerabilities, and ensure the continuity of actions

for promotion, prevention, and care, creating work processes in health surveillance and social and sanitary support aimed at vulnerable groups.[19,22-23]

Furthermore, the reported experience showed that, even in the face of the physical and administrative disorganization of the local health system, PHC demonstrated adaptive and problem-solving capacity. The mobilized nurses acted in an itinerant manner, reorganizing care flows and using communication technologies, such as WhatsApp, to maintain contact with pregnant women, provide guidance, and conduct remote monitoring. The use of digital tools and electronic medical records was decisive in retrieving clinical information, reducing continuity losses, and ensuring it in prenatal care, representing a concrete example of the potential of Information and Communication Technologies (ICT) in the management of care in emergency situations.

Among the ICTs used in this experience, electronic medical records stand out, allowing for the systematic, secure, and accessible recording of clinical information. This resource favors coordination among professionals and ensures the continuity of prenatal care, even in the face of fragmented territories.[24]

In parallel, the use of instant messaging applications, including WhatsApp, represented highly relevant complementary tools.[25] This resource enabled direct contact with pregnant women, the sending of individualized guidance, appointment reminders, and remote monitoring of warning signs.

These resources strengthen the bond between health teams and users, promote person-centered care, and contribute to mitigating perinatal risks in contexts of high social and environmental vulnerability.[25] The use of these devices via online chat tools, such as WhatsApp, for telehealth represented a relevant strategy to ensure continuity of care in disaster contexts.

Another relevant aspect was the role of nursing as technical and relational leadership in addressing the crisis. Skilled listening, territorialized action, and flexibility in care practices have made it possible to sustain bonds, reorganize routines, and gradually rebuild access to services. These actions reflect the power of nursing as a strategic category in care management and in responding to public health emergencies.

The performance of Primary Health Care (PHC) and nursing professionals in the face of climate events is fundamental, especially in the current context of intensified

environmental and social changes. Integrated into the Unified Health System (SUS), PHC, through its capillarity and connection with the community, has a unique capacity to act both in prevention and in response to crises, articulating intersectoral actions and guaranteeing comprehensive access.

However, given the increased frequency and severity of these events, it is essential that the system advances in rapid responses, incorporating strategies for health surveillance, risk management, and strengthening territorial practices. It is essential to incorporate specific protocols for pregnant and postpartum women into municipal contingency plans, provide emergency care kits, ensure remote access to electronic medical records, and invest in the permanent training of healthcare teams.

In short, the experience in the municipality of Canoas/RS reaffirms that the continuity of prenatal care in disaster situations is possible when there is interinstitutional coordination, professional leadership, territorial sensitivity, and strategic use of ICT. These elements are essential for strengthening the resilience of the SUS (Brazilian Unified Health System) and guaranteeing the right to health even in humanitarian crisis contexts.

Because it is an experience report, this study has some limitations that should be considered when interpreting the results. The main one refers to the absence of systematized and measurable data, because the actions were developed in an emergency context, in which detailed recording of activities was not always possible. This characteristic limits the quantification of impacts and the comparison between different units or periods. In addition, the restricted period, corresponding to the critical period of the floods from May to July 2024, and the spatial scope located in the municipality of Canoas limit the generalization of the findings to other geographical contexts or disaster situations with different characteristics.

Another aspect to be considered concerns the operational and contextual difficulties faced during the execution of the actions, such as interruptions in communication, scarcity of material resources and overload of the teams, factors that interfered with the scope and systematization of the monitoring.

Finally, the subjectivity inherent in the experience report is recognized, which is based on perceptions and records of the professionals involved. Despite these

limitations, the study offers relevant reflections and empirical evidence on care practices in disaster contexts, contributing to reflection on the improvement of policies and the need for maternal and child health care protocols in emergencies.

Conclusion

The experience lived in the municipality of Canoas/RS, during the flood period from May to July 2024, simultaneously highlighted the structural fragility and resilience capacity of the public health system in the face of natural disasters. The performance of the primary health care teams, especially the nurses, proved essential to ensure the continuity of prenatal care and protect pregnant women in vulnerable situations.

The reorganization of care flows, the use of ICT, intersectoral mobilization, and the adoption of itinerant strategies proved to be effective and replicable practices in other emergency contexts. This experience reinforces the leading role of nursing in the coordination and execution of care actions, highlighting the importance of qualified listening, the territorial approach, and the flexibility of clinical practices.

Therefore, it is urgent to include specific protocols for maternal and child health care in risk management and disaster response plans, in order to guarantee comprehensive care and the right to health even in humanitarian crisis contexts. Furthermore, we recommend strengthening the training and permanent capacity building of primary health care teams to act in emergencies, consolidating nursing as a strategic axis in the SUS's response to extreme weather events.

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