

Popular Communication and Health Surveillance: Strategies to Address the Oil Spill Crime/Disaster on the Northeastern Coast

Comunicação e vigilância popular em saúde: estratégias de enfrentamento ao desastre-crime do derramamento de petróleo no litoral nordestino

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Abstract: The 2019 oil spill criminal disaster affected traditional populations whose lifestyle is closely linked to artisanal fishing on Brazil's Northeastern coast. More than 5.000 tons of oil were collected along 4.300 km of the Northeastern Brazilian coast on the shores of 11 municipalities in Pernambuco State. Grassroots interventions aimed at both overcoming socio-environmental injustices and seeking social redress were applied in response to it by using light social technologies developed based on local needs. The aim of the present study is to map the communication and grassroots health surveillance strategies adopted by fishing communities suffering from this disaster's impact on Pernambuco. A qualitative, participatory, descriptive and documental study was conducted with 34 female community leaders and artisanal fisherwomen from 8 municipalities affected by this disaster/crime. Participants attended the training-action course for Popular Health Agents of Water Peoples held from November 2024 to January 2025. According to the results, these community communication strategies mainly included using WhatsApp, chatting, gatherings and meetings to discuss the situation. Actions to monitor the species affected by the disaster, as well as the affected rivers, beaches, statutes; the involvement of government agencies and guidelines for local population, stood out in the popular surveillance field. These strategies were essential for territorial initiatives linked to the disaster, as they led to both environmental justice and the construction of more resilient territories through social technologies and community participation. Institutional bodies must embody the expertise of social movements and traditional communities in formulating effective public policies.

Keywords: health communication; disaster surveillance; oil spill; health education.

Resumo: O desastre-crime do derramamento do petróleo ocorrido em 2019 afetou as populações tradicionais cujo modo de vida está profundamente ligado à pesca artesanal no litoral nordestino. Foram recolhidas mais de 5 mil toneladas de petróleo em cerca de 4.300 km da costa brasileira, incluindo onze municípios em Pernambuco. Frente a esse cenário, emergiram intervenções populares voltadas para a superação das injustiças socioambientais e à busca por reparação social, utilizando tecnologias sociais leves desenvolvidas a partir das necessidades locais. Este estudo teve como objetivo mapear as estratégias de comunicação e vigilância popular em saúde adotadas por comunidades pesqueiras impactadas pelo desastre em Pernambuco. Foi conduzido um estudo qualitativo, participativo, descritivo e documental, envolvendo 34 mulheres, lideranças comunitárias e pescadoras artesanais de oito municípios afetados pelo desastre-crime. As participantes integraram o curso de formação-ação de Agentes Populares de Saúde dos Povos das Águas, realizado entre novembro de 2024 e janeiro de 2025. Os resultados indicam que as estratégias de comunicação comunitária incluíram principalmente o uso do WhatsApp, divulgação "boca a boca", assembleias e reuniões para discussão do cenário. No âmbito da vigilância popular, destacaram-se ações de monitoramento das espécies afetadas pelo desastre e dos rios, praias e estatutários, acionamento de órgãos governamentais e orientação

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da população local. Conclui-se que tais estratégias foram essenciais para a iniciativa territorial frente ao desastre, promovendo, por meio de tecnologias sociais e participação comunitária, não apenas justiça ambiental, mas também a construção de territórios mais resilientes. Destaca-se a necessidade de que instâncias institucionais incorporem as experiências de movimentos sociais e comunidades tradicionais na formulação de políticas públicas efetivas.

Palavras-chave: comunicação em saúde; vigilância em desastres; derramamento de petróleo; educação em saúde.

1. Introduction

The 2019 oil spill disaster in Brazil was the largest accident of this sort in the country and one of the largest in the world, in extension terms (Pena et al., 2020). The disaster/crime concept was herein adopted for taking into consideration the damages caused by it and the vulnerability conditions that had emerged from a whole sequence of actions and/or omissions. It also disclosed the lack of clear accountability and delayed responses, given the disasters' magnitude and impact on the lives of affected communities and on the environment (Alves et al., 2024).

Oil spills of unknown origin were initially identified in Paraíba State at in late August. and, in the following months. It spread throughout the coastal strip of the Northeastern region and of part of the Southeastern region, in the following months (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis [Ibama], 2020; Santos et al., 2022).

More than 5.000 tons of oil were collected approximately 4.300 km along the Northeastern Brazilian coast on the shores of 11 municipalities in Pernambuco State (Pena et al., 2020; Santos et al., 2022). The oil spill impact crossed the socioeconomic, environmental, ecological and health dimensions, and affected the lives of people living in the fishing territories that suffered from this disaster's impacts (Santos et al., 2022; Silva et al., 2022). Accordingly, the oil spill affected artisanal fishing communities' sense of belonging, their lifestyle, sociocultural development and their subsistence connection with natural resources (Castro, 2018; Silva et al., 2022; Gonçalves et al., 2024).

Damages caused by environmental disasters, such as oil spills, worsen existing vulnerabilities in artisanal fishing communities where class, race and gender relationships are interconnected (Castro, 2018; Marques, 2020, Moreira et al., 2024). Estevo et al. (2021) stated that this disaster influenced these communities' income generation and cultural reproduction. It potentially changed and replaced their income-generating activities and had acute effects on human health. These factors got worse due to the Federal Government negligence. This mistake was made clear by the late disaster response actions, disorganization, precarious infrastructure and lack of protection to the affected ones (Ramalho, 2019; Alves et al., 2024).

Communication emerged as field for contesting narratives in times of crisis like the herein described one. Media coverage gained visibility

both in the state and national media, as environmental defense organizations, alternative media and international bodies reported the tragedy in their channels (Silva et al., 2022; Gonçalves et al., 2024). This information outspread led to disputes for narratives, but it neglected the perspective of affected local communities and led to socio-environmental injustices (Intervozes, 2020; Melo & Costa, 2023).

Lack of dialogical communication account for excluding the voices seeking socio-environmental solutions, worldwide (Plutynski & Fujita-Lagerqvist, 2016). Different communication forms, such as institutional communication from different bodies and sectors, or between sectors in the same organization, can emerge from environmental disasters and open room for different roles and social reach (Souto, 2021). The World Health Organization (WHO) points out communication risk as essential model to manage people, processes and systems, as it aims at preparing people living at risk to make fast protection and prevention decisions (Nunes, 2024).

On the other hand, community or popular communication emerge as instrument to achieve resistance and (re)appropriation scenarios. According to this transformation instrument, communities are information generators and starts (Peruzzo, 2009). Peruzzo (2009, p. 368) understands popular communication as “way to show up the populations’ impoverished segments, but in a mobilization process aimed at meeting their survival needs and political participation to achieve social justice”.

This communication can be seen as counter-hegemonic strategy making social interaction between individuals easier. It is so, because it helps reshaping the logic of locally lived experiences and opens space for a more horizontal and democratic communication that, in its turn, has the potential to broaden popular political participation (Mata, 2006; Almeida et al., 2011; Fernandes et al., 2017).

Different communication flows are between subjects necessary to fight systemic injustices, mainly in crisis contexts, such as oil spill disasters. These flows are internally observed between community members, themselves, and within their representative organizations; in articulation with external social movements sharing similar identification and demands; in contact with political and administrative public agents, who can implement necessary measures; in contact with the press, as mechanism to broaden the social debate (Kunsch, 2003; Peruzzo, 2024).

The process to strengthen alliances between social movements and independent media emerges as important alternative communication-channel to amplify the unheard voices (Marques, 2020; Nemer, 2022). Communities can circulate their ideas and demands, appropriate them, set debates on them and be challenged through communication practices. It gives these communities the possibility of being included in social and political structures (Johnston & Pieczka, 2018).

Community-based health surveillance actions are closely related to the

aforementioned processes and they work as territorially based strategies. Population health and environmental security depends on these strategies, given their positive impact, mainly when it comes to times of natural and technological disasters, humanitarian crises, epidemics and pandemics (Conselho Nacional de Saúde [CNS], 2018).

Machado et al. (2021, p. 4) stated that these actions are “a participatory and integrated health practice linked to health surveillance actions, networks, care services and community-based actions aimed at care, prevention and social support”. Surveillance achieves health and allows care through interactions with both the environment and individuals. This process must be based on acknowledging the knowledge deriving from individuals’ experiences and from different interactions in these spaces (Oliveira et al., 2024).

Trindade et al. (2021) analyzed the popular health surveillance strategies developed by fishing communities during the Covid-19 pandemic and observed emancipatory processes emerging from solidarity narratives as surveillance was exercised. These narratives disclosed individuals’ ability to articulate themselves and to produce knowledge in different sectors. It showed how debates about knowledge and collective management, at different social spheres, lead to the construction of healthy and sustainable territories, and to the development of emancipatory actions (Oliveira et al., 2024).

Thus, the communication and popular health surveillance process in environmental disaster contexts plays key role in the affected territory by reinforcing resilience and collective skills aimed at strengthening the territory (Lima et al., 2015; Fernandes et al., 2017; Oliveira et al., 2024).

Therefore, it is essential understanding how artisanal fishing communities affected by the herein addressed oil spill disaster developed their own communication and popular health surveillance strategies based on their social organization. It was done to acknowledge these practices as emancipatory processes for the construction of healthy, sustainable and supportive territories. Accordingly, the aim of the present study is to map the communication and popular health surveillance strategies adopted by fishing communities that have suffered from impacts caused by the oil spill disaster on Pernambuco State.

2. Methods

Qualitative, participatory and descriptive study substantiated by the systematization method by Holliday (2006). The research was carried out in eight municipalities known for their significant fishing activity on the coast of Pernambuco State, namely: Rio Formoso, Cabo de Santo Agostinho, São José da Coroa Grande, Itapissuma, Recife, Ipojuca, Jaboatão dos Guararapes and Goiana. They were all affected by the 2019 and 2020 oil spill disasters.

The study included 34 female community leaders and artisanal fisherwomen who were enrolled in the second class of the Popular Health Agents for Water Peoples Course, held from November 2024 to January 2025. This course was a training-action strategy (Fenner et al., 2021) funded by the Ministry of Fisheries and Aquaculture (MPA) and by the Public Policies, Care Models and Health Management Program (PMA) by researchers from Oswaldo Cruz Foundation in Pernambuco State.

The course was developed in partnership with representatives from the following entities: health management in Pernambuco State, social movements from artisanal fishing territories (Pastoral Council of Fishermen – CPP), National Articulation of Fisherwomen (ANP), Movement of Artisanal Fisherwomen and Fishermen (MPP), Suape Forum, Landless Workers' Movement (MST), Network of Popular Doctors (RMMP), Federal University of Bahia, Federal University of Paraíba and Fiocruz Ceará (Figure 1).

Popular surveillance and community communication actions were mapped at two phases during the training process. Module I – “Identities, Territories and Territoriality of Water Peoples”: investigated community communication actions through guiding questions about communication, production and information outspread forms, as well as through the used means and informational gaps found in them:

- a) How do you/your organization communicate?
- b) How do you/your organization produce content?
- c) How do you/your organization get information?
- d) What are the communication strategies observed in your territory?
What do you have available to put these strategies in practice? (a community radio station, a TV station and a blog, for example);
- e) What information is covered/addressed by these media outlets?
- f) What information would you like to have access to, although they are not provided by these media outlets?

Strategies for popular surveillance adopted during the herein assessed disaster were discussed in the second part of the during surveillance exercise activity “Popular Health Surveillance and Popular Organization as Strategy for Re-existence”. It included environmental change, record-keeping and communication identification, as well as proposals to improve the developed actions, as shown below:

- a) What were the signs given by the environment to show that something looked different?
- b) What is done when a change is identified?
- c) Who are the ones these observations are communicated to?
- d) How is this information communicated?



Figure 1
Organization network offset for the training-action course set for artisanal fisherwomen on the coast of Pernambuco State, "Open Training Program for Community Health Workers from Riverine Peoples".

- e) Based on the lessons learnt, what could had been done differently?
- f) What would be an ideal procedural actions toward these situations?

The adopted questions followed formative experiences acquired by fishing communities during, and after, the oil spill disaster (Santos et al., 2024).

The participants were split into four groups for this assignment. The groups were based on geographical proximity between municipalities: group 1 – Jaboatão and São José da Coroa Grande, group 2 – Cabo de Santo Agostinho and Recife, group 3 – Rio Formoso and Ipojuca, group 4 – Itapissuma and Goiana. Each group included fishing community presidents and/or associations, and representatives from artisanal-fishing social movements (CPP, ANP).

Data were organized in Microsoft® Excel® 2016 spreadsheets. Community communication actions were classified based on both municipalities and emerging categories, namely: strategies, media, information types and informational needs; and on popular surveillance actions, depending on guiding questions and group divisions.

The study followed guidelines in Resolution n. 466/2012 and in Resolution n. 510/2016 by the National Health Council. It was approved by the Research Ethics Committee of Aggeu Magalhães Institute (IAM/

Fiocruz-PE), under CAAE n. 25398119.9.0000.5190 and Opinion n. 5.037.340.

3. Results and discussion

The herein analyzed communication system and popular surveillance strategies were developed by 34 female cisgender leaders and artisanal fisherwomen (100%, N = 34) in the age groups 45-59 (48.4%; N = 15) and 35-44 years (25.8%; N = 8). In total, 48.4% (N = 15) of the participants identified themselves as Black; 45.2% (N = 14), as mixed-race; and 6.5% (N = 4), as White. Most of them graduated in high school (54.8%; N = 17) and 16.1% (N = 5) did not.

Black and mixed-race women prevalence reflected the racial composition in fishing communities, as they have historically faced environmental racism, socioeconomic inequalities and barriers to access their rights (Silva et al., 2021). Furthermore, most participants' schooling featured incomplete high school and it shone light on challenges to access higher education.

A map of community communication and popular surveillance strategies will be further presented, as well as these strategies' core role in artisanal fisherwomen's mobilization and resistance.

3.1. Echoing Voices: community communication strategies adopted by fishing communities during the herein addressed oil spill disaster

The result analysis allowed identifying the most often adopted communication strategies by the participants. Actually, 29.6% (N=7) of the assessed leaders pointed out 'WhatsApp' as their main digital communication tool, which is used for information sharing. The community-based information outspread, commonly known as "word of mouth", was observed in 22.2% (N=6) of all systematizations, and gatherings; meetings, in their turn, represented 11.1% (N=4) of the strategies adopted in the assessed territories (Figure 2).

Furthermore, sound truck (3.70%; N=1) and its smaller and more economical version, the sound motorcycle (7.41%; N=2); Boca da Ilha Community Radio (3.70%; N=1), Atapuz FM Radio (3.70%; N=1) and posters (7.41%; N=2) were the adopted community-based information outspread strategies. Finally, phone calls (3.70%; N=1) and 'gossip' (3.70%; N=1) were also mentioned by fisherwomen as content outspread means (Figure 2).

Practicality and fast access to information have encouraged the growing use of messaging applications, such as WhatsApp, which became one of the main communication strategies adopted by fisherwomen (Figure 2). However, digital exclusion remains in Brazil's peripheral territories due to

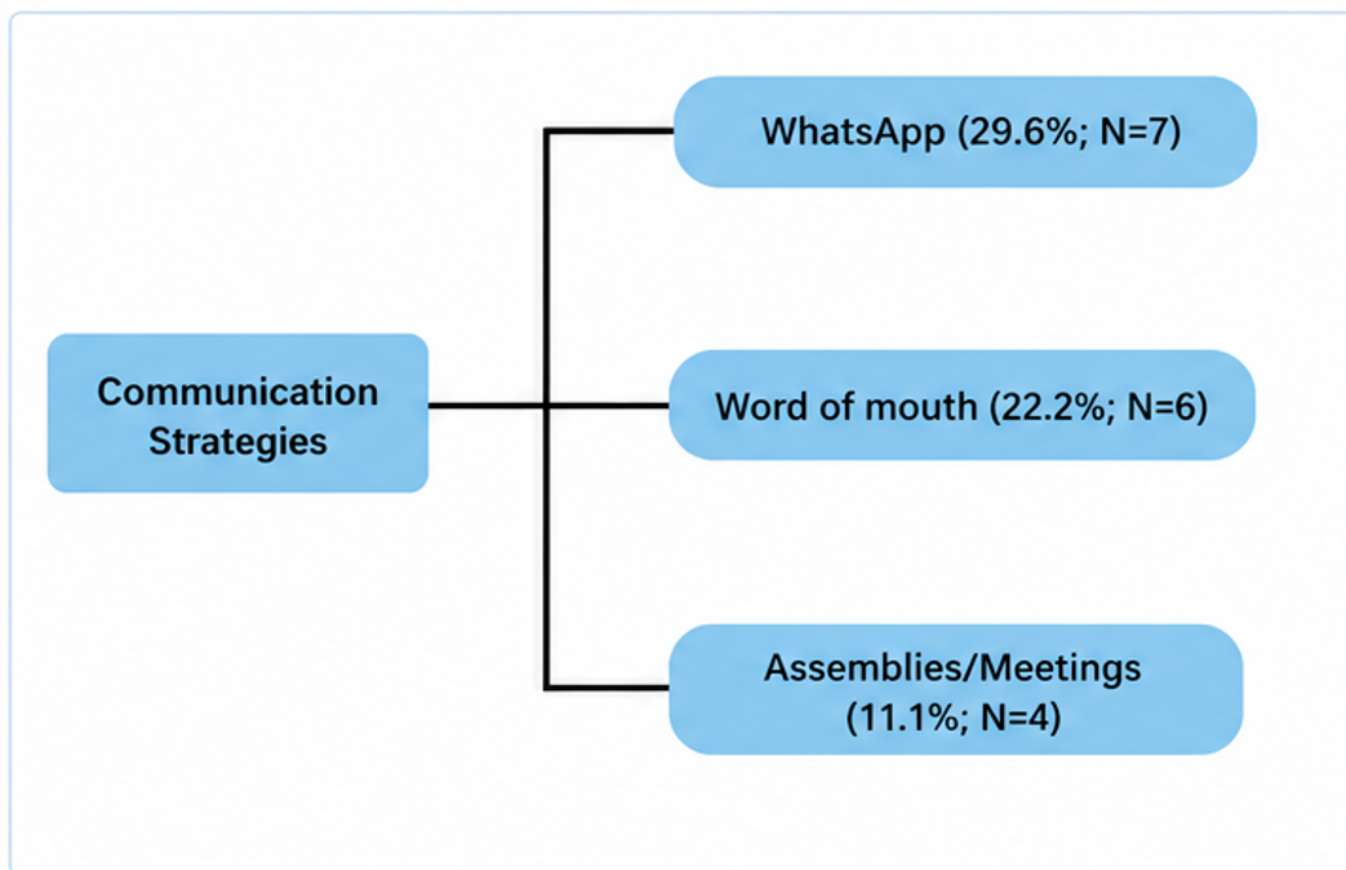


Figure 2
Most often communication strategies used by fishermen and fisherwomen in eight municipalities in Pernambuco State.

insufficient access to it, to digital illiteracy or, in some cases, to the low use of these tools (Almeida et al., 2005).

The rights of rural, forest and water-based populations (RSFPs), such as access to education, housing and communication, are still a challenge (Carneiro et al., 2014). This limitation became clear during the 2019 oil spill disaster in Pernambuco State, when more than 60% of the voices heard were those of public authorities, rather than those of the affected communities, themselves (Intervozes, 2020).

Accordingly, adopting community strategies, such as ‘word of mouth’ and ‘posters’, have stood out as information sharing mechanism (Figure 2). Communication emerging from everyday life in the territory and from interactions between different subjects strengthen the part played by populations affected by these disasters. It opens room for better information flow, besides limiting the adoption of vertical logics. Yet, it allows information to be produced and outspread by residents in the territories, themselves (Antunes & Coqueiro, 2022).

Peruzzo (1998) described this practice as communication ‘of the people’, ‘by the people’ and ‘for the people’. The “communicating from within” also manifested itself in this oil spill event, as well as in other scenarios, such as the Covid-19 pandemic, when communication in combination with rationality and effectiveness, helped strengthening the preservation will and resilience, despite the experienced adverse moment (Suzina, 2023). Fishing

communities' strategies (Figure 1) exceed the mere information transfer, because content would come up from the territories' symbolic universe, in association with their reality, culture and local experiences (Suzina, 2023).

Community radio station (N=7), sound bike (N=4) and sound trucks (N=3) are the most often used information outspread means in the herein evaluated community. However, institutional channels were also observed, as well as meetings and Municipal Rights Council (N=1) gatherings. Suape Socio-environmental Space Forum Association (N=1) also emerged among the accessed means, although at low frequency (Figure 3). Television (N=1) showed up as communication vehicle, as well.

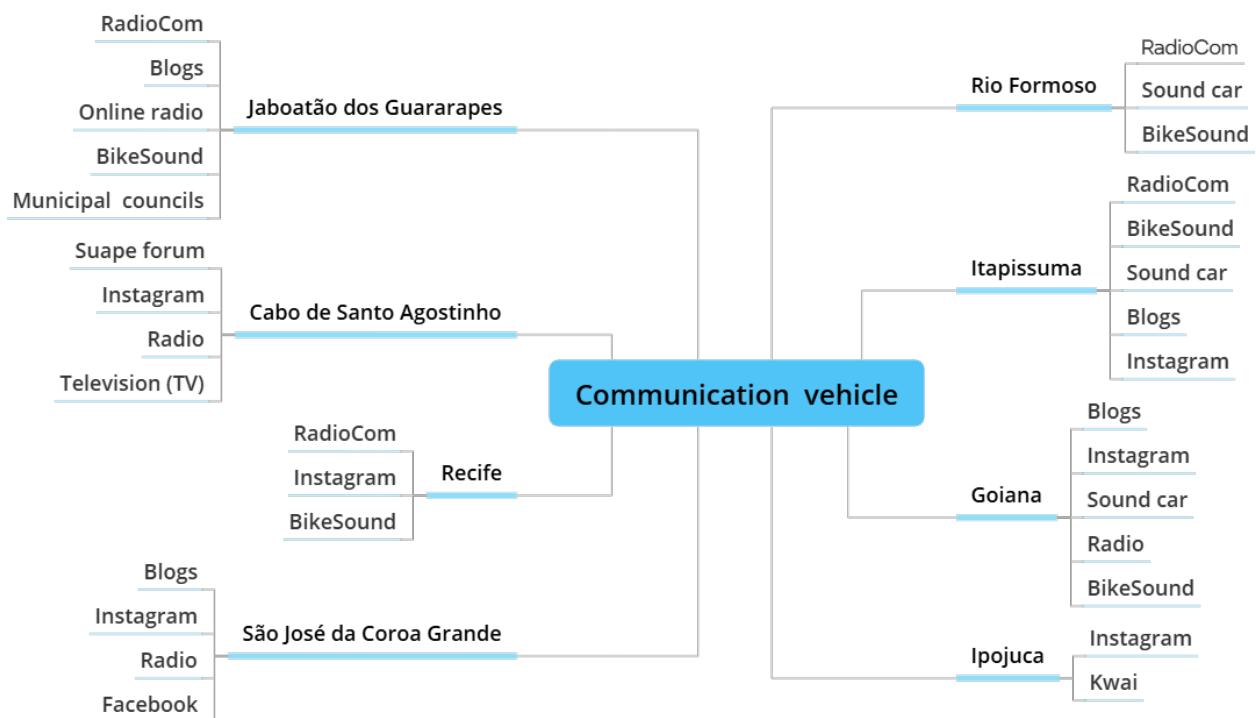
Instagram (N=5) was the most popular digital platform, whereas Facebook (N=1), Kwai (N=1) and blogs (N=3) were less frequent (Figure 3).

The analysis of communication means and strategies used by communities disclosed a whole diversity of channels combining digital and community media. Community radio stations stood out among them due to their broader use by the population, given their constant role in discussing relevant topics and in providing informative and entertainment services focused on the needs of the social groups they serve (Peruzzo, 2024).

Back in the 1970s, community radio stations achieved high audience ratings and were acknowledged in their communities. Such an appreciation stemmed from their ability to keep their programming aligned with the territories' interests, culture and specific issues (Peruzzo, 1999)

Entanglement of local communication strategies focused on the needs of communities, use of digital social media and interaction with commer-

Figure 3
 Community communication means used by fishermen and fisherwomen in eight municipalities in Pernambuco State.



cial media outlets were the factors highlighting how dynamic popular communication practices are. They are featured as multiple instruments used by social movements to broaden the public debate, to improve information outspreading level and to boost collective mobilization processes (Plutynski & Fujita-Lagerqvist, 2016; Johnston & Pieczka, 2018; Melo & Costa, 2023).

It is worth highlighting that Brazil ranks the third position in the rank of countries accounting for the broadest access to digital social networks. This rate increased during the COVID-19 pandemic (Comitê Gestor da Internet no Brasil [CGI.br], 2021; Pacete, 2023). Thus, access to communication platforms was outstanding, given the increased (re)appropriation of digital technologies by vulnerable people aimed at sharing information outside the hegemonic media (Marques, 2020).

It is important highlighting the impairments faced by traditional and marginalized communities at the time to access digital communication. These limitations are related to high internet-service prices and to lack of knowledge on how to use Information and Communication Technologies (ICTs) (CGI.br, 2021; Nemer, 2022). Nemer (2022) stated that daily actions based on using digital technologies challenge the limits of social segregation by promoting broader and more accessible interactions between different groups. These dynamics can help reducing inequalities by making the circulation of people, ideas and opportunities easier.

According to the results, despite the updates in digital technologies, community communication channels still play key role in information sharing in certain localities. It gives room for these individuals, besides expanding fishing communities' visibility and voice (Peruzzo, 2024).

Community members put their communicative citizenship into practice through the complementary use of these channels. They acknowledge their relevance as subjects of rights within the communication field. It is so, because of the demands and actions making popular participation a concrete reality (Mata, 2006; Almeida et al., 2011). Such a participation can be broadened by broader access to information.

Six main topics were identified as the information fisherwomen would like to often access, namely: women's empowerment, health and social rights, partnerships between organizations, investment in communication, transportation and megaprojects. These topics were grouped into core axes standing out as communities' prime strategies:

- 1) rights and social justice,
- 2) movements' organization and strengthening; and
- 3) infrastructure and development (Table 1).

Women's empowerment emerged as very strong topic on the Rights and Social Justice axis, mainly if one bears in mind that the current study was set over a mostly fisherwomen and female shellfish collectors' audience (Table 1). According to a survey carried out in 2023 by the Ministry

Table 1. What are the information fisherwomen would like to often access in the media?

Topics	Main axes
Women’s empowerment Health Social rights	Rights and social justice
Partnership between organizations Investment in communication	Movement organization and strengthening
Transport Megaprojects.	Infrastructure and development

of Fisheries and Aquaculture, approximately 49% of the fishing workforce in Brazil is formed by women (Ministério da Pesca e Aquicultura, 2023).

However, despite their significant participation in this sector, fishing work remains as a mostly masculine activity, and it worsens fisherwomen invisibility and lack of access to their rights (Beck, 1991). Thus, women’s empowerment has proven itself as essential element to “break” the hegemonic pattern of the gender division of labor. It also boosted women’s politicization and reinforced their role as artisanal fisherwomen (Maneschy et al., 2012).

Collective existence as “women of the waters” brings along inherent gender, race, ethnicity and class oppression. Yet, the invisibility of their artisanal fishing work also features another vulnerability process (Flores et al., 2024). Therefore, it is necessary developing strategies to improve these women’s emancipation, health and visibility. This context makes communication strengthen narratives that take into account these individuals’ lifestyle and social reproduction (Araújo & Cordeiro, 2020; Peruzzo, 2024).

Health, in its turn, is understood from the individuals’ needs perspective and exceeds biological aspects. It is so, because it also encompasses the social, cultural, political and environmental dimensions that influence health-disease processes, including communicative processes (Breilh, 2006).

It is worth emphasizing that artisanal fishers have a traditional lifestyle marked by a particular interaction with the environment. Therefore, it requires health services and professionals committed to these communities’ specificities and lifestyle (Brazil, 2011). This premise was established in The National Policy for Comprehensive Health of Rural, Forest and Water Populations (PNSIPCFA) which set this premise for the Unified Health System (SUS) in Ordinance n. 2,866, from December 2, 2011 (Ministério da Saúde, 2011). It sought to protect and promote health in artisanal fishing territories.

These two topics are intertwined with Social Rights regarding access to essential services such as education, housing, work and other mechanisms aimed at providing the necessary means for citizens to participate in decision-making and to develop their own skills (Hachem & Bonat, 2019).

The Movement's organization and strengthening, and access to information about collaboration between different organizations, stood out in the second axis, and it disclosed the concern with broadening and bringing more visibility to joint initiatives. This process would enable the development of strategies focused on solving local issues of common interest (Table 1).

Investment in communication, herein understood as popular or community-based practice, in its turn, highlighted the exercise of direct social participation entangled to citizenship education. These communities set bonds with, and strengthen their territories, through community activities, as they boost local demands, complaints and claims at regional and national level (Peruzzo, 1999).

Finally, the debate on transportation and megaprojects gains prominence in the infrastructure and development field, since these elements are structural for the quality of life of the general population (Table 1). Updates in megaprojects such as industrial, tourism and port developments, have set the profile of fishing and riverside territories, besides intensifying socio-spatial inequalities and limiting access to essential services. Furthermore, access to transportation is closely affected by socio-spatial and demographic changes, and it shines light on the hard time guaranteeing basic rights to these populations. Thus, this scenario leads to marginalization and increases inequality rates (Coelho, 2001; Marques & Torres, 2005; Medeiros et al., 2016; Paula, 2020).

3.2. Strategies for popular health surveillance developed in territories affected by the oil spill disaster

Responses from the assessed groups allowed identifying the Popular Health Surveillance strategies adopted by fishing communities due to socio-environmental disasters, such as the herein addressed oil spill disaster. The pointed out actions included monitoring the species, rivers, beaches, and estuaries affected by the disaster; holding community meetings to discuss the situation; contacting competent authorities and providing assistance to the local population (Table 2).

In addition to guiding the reflection process and to developing collective responses, this event exposed traditional communities' extreme vulnerability. Furthermore, it highlighted the need for coordinated strategies aimed at both mitigating environmental impacts and protecting their territories and lifestyle (Trindade et al., 2021).

Table 2 provides the summary of community health surveillance actions described by the assessed fisherwomen.

With respect to disaster situations, results have shown that environmental-changes identification mainly takes place through direct observation by fishers and other local residents (Table 2). Therefore, changes in water color, presence of foreign substances (such as oil), changes in fauna

Table 2 Artisanal fisherwomen leaders' perceptions of popular health surveillance strategies implemented during the oil spill disaster.

Questions	Group 1	Group 2	Group 3	Group 4
How did the environment give signs that something was different?	On the rocks, on the sandy beach; then, it moved towards the mangroves.	Changes in water color; smell; level; seeing foreign objects.	Large amounts of oil on the water.	Oil particles on the coast; on the mangroves.
What did you do when you notice something different?	We went looking for community help.	Took photos and shot videos; communicated with residents.	Mobilize the community; contact the relevant authorities.	Meeting the community, association, colonies, environmental department and NGOs (e.g., Save Maracáipe).
Who did you inform when you noticed something different?	We informed our fellow fishermen.	Association leadership; colony.	Colonies and competent entities.	Environment Secretariat; Health Secretariat and Press Office.
How did you communicate this situation/discovery?	Word of mouth and WhatsApp.	Word of mouth and WhatsApp.	Photos; videos; direct links; social networks.	Word of mouth; official letter; WhatsApp; phone call.
What would you do differently, based on the lessons you've learnt?	They would not come into direct contact with the oil; they would use protective equipment.	Do not expose themselves without PPE (Personal Protective Equipment).	Monitoring species; rivers; beaches; estuaries.	Together with the community, they would prepare an official document with information and evidence, which they would then forward to the environmental and monitoring department.
If it were necessary to create a step-by-step guide on how to act in these situations, what would it look like?	Contact public authorities; demand oversight and protective barriers.	Form a group and communicate about environmental monitoring.	Oversight by competent authorities; education for communities.	<ol style="list-style-type: none"> 1. Bringing the community, association or colony together to monitor changes through photos and videos, and sharing them on social media. 2. Take this material to the environmental and health department, so that appropriate measures could be taken. 3. If the environmental and health departments do not respond, contact the Public Prosecutor's Office.

and flora, and intense or unusual smells are some of the signs turning on the red lights for possible contamination. This knowledge is daily acquired

through relationships set with the environment, which is also a space for these populations' housing, work and subsistence. This knowledge allows giving fast and contextualized responses to environmental threats, as it connects historical experience with the empirical knowledge acquired for generations (Trindade et al., 2021).

Therefore, data collection and production, based on participatory and simplified monitoring, are core Popular Health Surveillance aspects. This model strengthens communities' autonomy in identifying environmental and health risks, as well as allows the development of territorialized coping strategies substantiated by local specificities. Yet, these strategies also follow scientific and popular knowledge (Meneses et al., 2023; Silva et al., 2023).

Similar to the oil spill disaster, changes in the environment were also observed beforehand by the local population in Brumadinho disaster (2019). Residents observed water turbidity, and the presence of mud and mining tailings in it. Once again, in both cases, the main victims were traditional communities, such as artisanal fishers, riverside dwellers, quilombola communities and indigenous peoples, whose subsistence and social reproduction were deeply affected (Silva & Lima, 2021). These disasters showed not only the vulnerability of affected communities, but the negligence of both the State and the accountable private agents. This finding made community organization essential for further monitoring, accident reporting and for the process to claim for their rights (Costa et al., 2024).

The oil spill mobilized immediate responses that turned resistance into political action and strengthened community organization towards environmental and social protection (Trindade et al., 2025). These organizational processes were boosted by struggles for the acknowledgment of rights, from a (de)colonial perspective. Communities claimed the preservation of traditional identities and territorialities by embracing ancestral knowledge and practices, as well as stood for their body-territories and right to live in good health conditions (Coradin et al., 2024; Trindade et al., 2025).

According to the analysis of recent environmental disasters, these events are embedded in a larger conflict context among capital, labor and nature, as economic interests often override environmental preservation and the well-being of traditional populations. Thus, Popular Health Surveillance stands out as resistance and social mobilization strategy by articulating community and institutional actions to promote health in affected territories (Oliveira et al., 2024). It is essential acknowledging traditional knowledge and the active participation of affected populations in order to achieve a fairer and more effective public policies aimed at environmental damage prevention and mitigation (Carneiro et al., 2024).

The analysis highlighted that communities adopt different coping strategies, such as local mobilization and the use of social networks like WhatsApp, in face of the three aforementioned threats (Table 2). Using

these digital tools in association with direct communication, such as word of mouth, allows fast information outspread, which influences public opinion and put pressure over authorities to implement measures aimed at fulfilling vulnerable populations' demands (Carneiro et al., 2024).

This process comprises visual records, documentation in photos and footages, and communication in informal channels such as chatting and messaging applications, in institutional channels and in the press. It pinpoints the creation of Popular Surveillance networks whose social actors make solidarity and collective care alliances to reinforce their ethical and community dimension (Trindade et al., 2025).

Communities ability to organize themselves into networks and broaden their power to stand for their territories and rights is core strategy to develop territorialized actions grounded in community organization. Therefore, Popular Health Surveillance strengthens affected territories' response capacity and seeks to overcome the Health Surveillance hegemonic and vertical logic, as it oftentimes imposes interventions that, in their turn, do not take into consideration the knowledge and realities of vulnerable communities (Oliveira et al., 2024).

Traditional and marginalized communities spontaneously develop communication, participatory monitoring and solidarity-based network forms to face the challenges imposed by crises caused by health and socio-environmental hazardous events, such as that observed during the COVID-19 pandemic. These initiatives mainly come up at times marked by multiple social, economic and environmental vulnerabilities, besides stressing affected groups' resilience and organizational capacity (Carneiro & Pessoa, 2020).

Another relevant element highlighted by the present results lies in the emancipatory and popular communication process surpassing the traditional risk communication model during disasters, since such a process is triggered by the community itself, and expands to different spheres. Initially, fishers, local associations and colonies share information among themselves, then, they contact NGOs, environmental agencies, health organizations and the press (World Health Organization [WHO], 2018). This information flow shows a simultaneous popular mobilization movement and the search for institutional support. This path reinforces the importance of Popular Health Surveillance and Communication as coping tool. However, this process also highlights the need for getting in contact with federative bodies to guarantee proper support for the affected communities (Carneiro et al., 2024).

The outspread of artisanal fishermen and fisherwomen's health demands after environmental disasters and conflicts caused by the expropriation of their territories demands a surveillance model from the Brazilian Unified Health System (SUS) committed to life and social participation defense (Trindade et al., 2025). Thus, popular movements emerging from

these territories can challenge established practices and inspire more horizontal and effective health surveillance protocols capable of making production socio-environmental models' impact on local populations visible (Meneses et al., 2024).

Community responses also highlight the concern with individual and collective safety, mainly after the exposure to contaminants and other environmental risks (Table 2). Therefore, it is essential broadening the use of Personal Protective Equipment (PPE) in case of socio-environmental disasters to strengthen community organization for continuous territory monitoring and popular communication targeting health hazards. These actions must be based on the communities' own perceptions and comply with Popular Health Surveillance principles, which prioritize productive models over local populations (Silva et al., 2023).

Several initiatives were proposed by the assessed groups to improve response strategies, among them one finds creating action protocols involving evidence documentation in photos and footages, ensuring broad outspreading on social networks and community media (Table 2). Furthermore, it is recommended to issue formal complaints and to have straight contact with the Public Prosecutor's Office in face of omission by the competent authorities. The aim of these measures is not only to strengthen fishing communities' response capacity, but also to broaden their active participation in social control, in case of environmental disasters (Oliveira et al., 2024).

The reported experiences have shown that Popular Health Surveillance is not limited to disaster response, but they are a continuous resistance practice substantiated by ancestral knowledge and collective learning. Daily observation, community mobilization and listening to residents in the territories are core elements to strengthen local responses to institutional omission and to expand fishing communities' autonomy to stand for their lifestyle by acknowledging artisanal fishers as the very stars of horizontal and solidarity-based processes capable of both (de)colonizing health practices and achieving environmental justice (Meneses et al., 2024; Trindade et al., 2025).

4. Final Considerations

Community communication and surveillance strategies played key role in addressing the impacts of the herein assessed oil spill disaster by enabling fishing communities in Pernambuco State to act in an organized and collaborative manner. Using social technologies and information outspread through different communication channels was the way to prove the power of community participation at the time to respond to socio-environmental disasters. Community surveillance helped monitoring the disaster's consequences and ensuring greater autonomy and protection for the local population. These strategies led to social reparation and environmental

justice, as well as made the construction of a more supportive, resilient and sustainable territory, easier.

Therefore, the relevance of adopting institutional measures based on greater social participation is clear. These measures understand and embody social movements and traditional communities' experience, mainly of those living in historically vulnerable territories. From this perspective, building pathways based on these communities' knowledge helps reshaping how policies, projects and actions are conceived by public authorities, the academia and by other sectors in society.

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