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Perceptions and Narratives about Psychosocial Impacts Following the 2021 Flooding and Citizen's Displacement in Belgium: a Qualitative Interview Study

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Abstract

Background: Climate change poses one of the most urgent challenges for communities affected by natural disasters, causing not only physical destruction but also profound psychosocial impacts. The 2021 floods in Belgium were among the country's most devastating natural disasters. Over 200 municipalities were affected, tens of thousands of lives disrupted, and many communities faced immense loss and uncertainty. This study examines the psychosocial impact of and response to the 2021 floods in Belgium's Vesder Valley.

Methods: We conducted semi-structured interviews with 2 affected citizens and 20 frontline disaster responders on personal experiences and challenges of the disaster and the organization of the psychosocial response. We inductively coded and identified recurring themes and categorized them based on participants' shared experiences and perspectives.

Results: Three key themes emerged: (1) High prevalence of psychosocial distress, including symptoms of anxiety, depression, and post-traumatic stress disorder (PTSD) reported by both affected residents and frontline disaster responders; (2) Recovery influenced by socioeconomic disparities, with low-income individuals facing greater obstacles due to lack of insurance coverage and financial instability; and (3) Significant gaps in disaster preparedness and response systems, evidenced by poor inter-agency coordination, slow delivery of emergency aid, and widespread public dissatisfaction with the effectiveness of formal humanitarian assistance.

Conclusion: This study highlights that psychosocial support in post-disaster recovery cannot be addressed in isolation. It must be integrated with efforts to resolve financial burdens, housing insecurity, and lack of insurance, by combining preparedness, material assistance, and accessible mental health care tailored to local realities.

Keywords

Floods, climate change, psychosocial impact, health, anxiety, vulnerabilities, post-traumatic stress

Table of Contents

Abstract	3
Table of Contents	4
1. Background	5
2. Methodology	7
2.1 Study Design and Ethics Approval	7
2.2 Target Population and Recruitment Strategy	7
2.3 Data collection	7
2.4 Data analysis	7
2.5 Involvement of the Research Team in Data Collection and Analysis	8
3. Results	8
3.1. Participant’s Demographics	8
3.2. Key Dimensions Related to Psychosocial Impacts from Participant’s Experiences	9
3.3 Psychosocial Impacts of Disaster	10
3.4 Mediating and Indirect Factors Influencing Recovery	15
3.5 Organization of the Psychosocial Response and Challenge in Disaster Response	20
4. Discussion	27
4.1. Interpretation of Findings	27
4.2. Strengths and Limitations	28
5. Conclusions	29
6. Funding	29
7. Acknowledgments	29
8. Bibliography	30
9. Appendix	32
Appendix 1: Overview of Guide with Main Questions and Prompts	32
Appendix 2: Visuals from the Study Site Collected During Explorations	33

1. Background

Extreme flooding during the summer of 2021 severely impacted several Western European countries, including Belgium, Germany, and the Netherlands, resulting in over 200 fatalities and infrastructure damage amounting to billions of euros (United Nations University Institute for Environment and Human Security [UNU-EHS], 2023). In Belgium, heavy rainfall began on July 13th, 2021, and expanded through July 14-15th with some municipalities experiencing 150 millimeters of precipitation within 24 hours—approximately twice the monthly average (see Infographic 1). In combination with pre-event soil saturation from previous rain, and local hydrological factors, this rainfall caused streams to overflow. Areas near small rivers or river tributaries without flood defenses quickly became overwhelmed by the volume of rain and represented the most affected/damaged areas (Geer Association, 2022), leading to destroyed houses and vehicles and triggering landslides (Cornwall, 2021).

More than 200 Belgian municipalities were affected, impacting up to 100,000 individuals, 50,000 buildings, nearly 100 kilometers of roads, and generating 160,000 tons of debris (Decléene, 2021; Fransen, 2023; Nationaal Crisiscentrum, 2021; Nationaal Crisiscentrum, 2022). This included the Meuse River and its tributaries, such as the Vesder, along with municipalities like Pepinster, Verviers, Chaudfontaine, Trooz, and Theux (see infographic 1) in the province of Liège, located in the Walloon region of Belgium (Tockner et al., 2022). This event represented the deadliest disaster in Belgium's history. At the 26th Conference of the Parties (COP26) in Glasgow, Belgian Prime Minister Alexander De Croo emphasized that it marked the first recorded instance of climate change-related fatalities in Belgium (HLN, 2021). The Intergovernmental Panel on Climate Change (IPCC)

Sixth Assessment Report (AR6) predicts that such extreme precipitation events will become more severe and frequent in the future triggered by climate change (IPCC, 2022).

Flooding is among the most common and economically costly natural disasters in Europe, impacting communities beyond just physical destruction (European Commission, 2023; World Health Organization Europe, 2017). Over the past two decades, nearly every European country has experienced at least one flood event, with 49 out of the 53 member states affected (World Health Organization Europe, 2017). It can also be a significant driver of displacement and evacuation, often forcing people to abandon their homes temporarily or permanently (Black et al., 2011; Fransen et al., 2023; Kakinuma et al., 2020). Globally, in the past ten years, about 22.08 million were displaced due to weather-related disasters, of which nearly half due to floods (Staff, 2024; Smith et al, 2014).

Flooding is linked to both mortality and morbidity. The World Health Organization (WHO) estimated that 400 floods between 2000-2014 caused 2,000 deaths and affected 9 million people's health (World Health Organization Europe, 2017). This includes waterborne diseases, injuries, mental health disorders, and impaired psychosocial wellbeing. Its severity varies based on the type of flooding (e.g., slow-onset vs. rapid-onset), disruption of available health services, and pre-existing vulnerability of affected populations (WHO Europe, 2017). As climate change intensifies, floods are expected to become more frequent and severe, posing greater threats to public health and economic stability (European Commission, 2023).



Infographic 1: Affected area of the Vesder Valley (Belgium) impacted by the floods

Source: De Standaard, 2021; accessed at: https://www.standaard.be/cnt/dmf20210715_97457197

With regards to psychosocial health, affected individuals may experience both primary stressors (the flood itself) and secondary stressors (the flood's aftermath) (Padhy, 2015;

Zenker et al., 2024). These experiences can lead to prolonged recovery periods and exacerbate psychosocial distress (Stanke et al., 2012), including stress, anxiety, depression, and post-traumatic stress disorder (PTSD) (Butler et al., 2018; Fernandez et al., 2015; Tong, 2017). Psychosocial impact refers to the social and psychological consequences of disasters, affecting daily life and overall well-being (Edelstein & Vanclay, 2024). The Society for Biopsychosocial Science and Medicine defines psychosocial well-being as “the ability to maintain hope for the future and effectively function in daily life” (2023). It comprises emotional, psychological, social, and collective well-being (Eiroa-Orosa, 2020; Larson, 1996; Martikainen et al., 2002). Evidence suggests that psychosocial well-being indicators are malleable and can be improved through intervention (Society for Biopsychosocial Science and Medicine, 2023). Studies highlight that the psychosocial impact of natural disasters can have long-term effects on affected populations (Goldmann & Galea, 2013; Stanke et al., 2012; Tong, 2017).

To address these psychosocial challenges, the Inter-Agency Standing Committee has developed guidelines on mental health and psychosocial support (MHPSS) in emergencies. These guidelines emphasize the importance of meeting people’s diverse needs through a layered system of support (Figure 1). At the most basic level, ensuring access to security and essential services, such as clearing debris, providing shelter, food, and clean water, plays a critical role not only in physical survival but also in promoting mental health and psychosocial well-being. Providing basic services and ensuring security represent foundational interventions that may substantially reduce the risk of long-term adverse psychosocial effects (IASC Reference Group on Mental Health and Psychosocial Support in Emergency Settings et al., 2007).

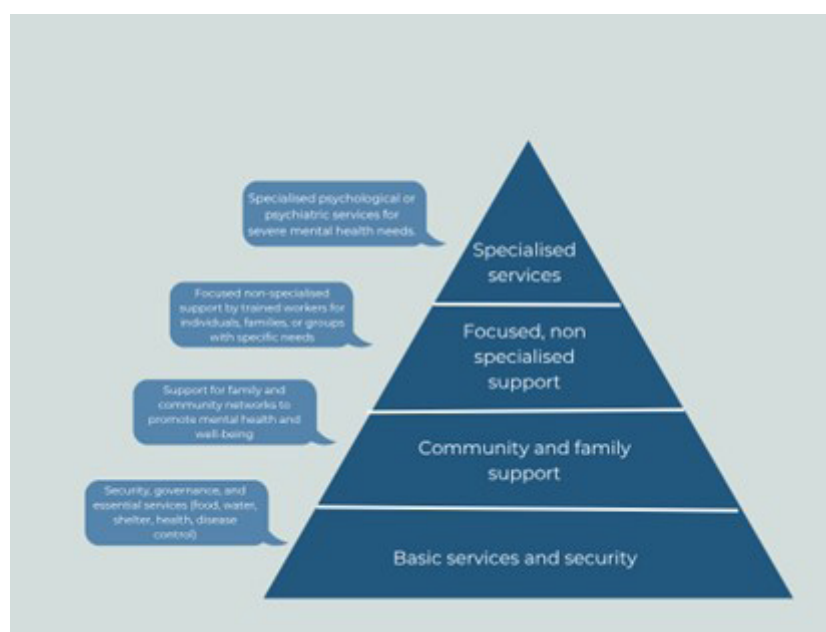


Figure 1: Intervention pyramid for mental health and psychosocial support in emergencies.

Source: Adapted from “*Intervention pyramid for mental health and psychosocial support in emergencies*,” in IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings (n.d.), by the Inter-Agency Standing Committee. Copyright by Inter-Agency Standing Committee.

De Maeyer et al (2025) examined the psychosocial well-being of 114 affected individuals after the 2021 floods in Belgium using quantitative survey data two years post-event and found that 54% reported a decline in psychosocial well-being with lower socio-economic status (SES) individuals experiencing greater declines. The majority also recognized the disaster’s psychosocial impact. This study aims to add to these insights using a qualitative research approach. Through in-depth interviews with affected citizens and frontline disaster responders, including aid workers and volunteers, we seek to: (1) understand how the 2021 floods affected both citizens and frontline disaster responders; and (2) identify and explore key dimensions of psychosocial response to the 2021 floods.

2. Methodology

2.1 Study Design and Ethics Approval

We chose semi-structured individual and group interviews as the most fitting design for this study as it balances structure and flexibility, allowing researchers to explore key topics while enabling participants to share their experiences in depth. Semi-structured interviews follow a topic guide but remain open-ended, ensuring nuanced insights from affected individuals and healthcare workers. Their adaptable format also allowed for in-person, computer-based, and group discussions, ensuring accessibility in data collection (Bernard, 2002). The study received ethics approval from the Commission for Medical Ethics of Ghent University Hospital on October 22nd, 2022 (approval number: ONZ-2022-0107).

2.2 Target Population and Recruitment Strategy

The study population consisted of citizens who were present in the affected area during the floods, as well as frontline disaster responders, including health professionals, aid workers, and volunteers involved in the post-disaster response. The following inclusion criteria were applied:

1. For all participants: proficiency in French, Dutch, or English.
2. For citizens: residency in an area impacted by the Vesder Valley 2021 floods.
3. For frontline disaster responders: active involvement in response efforts during the 2021 Vesder Valley floods.

A purposive sampling technique was employed to select frontline disaster responders based on researcher judgment, incorporating maximum variation sampling to ensure diversity in disciplines, regional representation, and experience. For citizens, convenience sampling was used, selecting participants who met the inclusion criteria and were available or willing to participate first. Ultimately, 22 participants were recruited, including affected citizens, civil society actors, and local, regional, and national authorities, such as mayors or municipal managers. Data saturation was reached when no new themes emerged during interviews.

2.3 Data Collection

The interviews focused on the psychosocial impacts of the floods, particularly the lived experiences of those affected by the disaster. The interviewer followed a pre-structured topic guide (see Appendix 1). Additionally, demographic data—including age, profession, years of experience, gender, and place of work or residence—were recorded. The first interview took place in June 2022, and the final interview was conducted on November 20th, 2023 (see Table 1). For two participants, follow-up interviews were conducted (in June 2022 and May 2023), and these participants were labeled as 1.A/1.B and 3.A/3.B to distinguish between the two interview rounds.

All audio recordings and transcripts were pseudonymized, meaning each participant was assigned a unique number for storage and reporting. The pseudonymized data was shared with other investigators, but only the principal investigator (P.I.) had access to the key linking participants' identities to their assigned numbers. The document linking names to participant numbers, along with the informed consent forms, is securely stored in a private folder on the Ghent University network. All recordings and transcripts are stored on a password-protected Ghent University server and will be retained only for the duration necessary for this study and up to one year after publication.

2.4 Data Analysis

The Data was analyzed using NVivo 14 through an inductive coding approach (Lumivero, 2025). The analysis began with a thorough review of the raw interview data, allowing key concepts and themes to emerge organically. When necessary, interviews conducted in French or Dutch were translated into English and transcribed verbatim to ensure accuracy. The coding process started with open coding, identifying significant statements while staying as close as possible to participants' original wording. As analysis progressed, codes were refined, new codes were added, and others were merged or adjusted to better represent the data. Once coding was complete, transcripts and the coding framework were revisited and refined, ultimately organizing findings

into subcategories that captured the psychosocial impacts and responses, along with related themes. In the second phase, codes were grouped based on thematic similarities and categorized according to their relevance to narrative structures and actor roles.

2.5 Involvement of the Research Team in Data Collection and Analysis

The interviews were coordinated by Dr. Charlotte Scheerens, the principal investigator (P.I.), in collaboration with researchers and students who conducted interviews, including Dr. Samuel Lietaer, Tibo Uyttersprot, Aline Vandenbroeck, Lise Vanden Haute, and students Ine Baert, Axelle De Langhe, Emma Depreitere, Mirte Bergmans, Clara Symaey, Tine De Winter, Stef Verdonck, and Parcival Degroote, along with Nele De Maeyer. French-language interviews were independently translated into English by Samuel Lietaer, Aline Vandenbroeck, and Joseph William Easton, while coding was performed by Olivia Marie Toles and Nele De Maeyer. The article was edited by Olivia Marie and Dilek Güneş Reubens under the supervision of Dr. Nidhi Nagabhatla and Dr. Charlotte Scheerens.

3. Results

3.1 Participants’ Demographics

The study sample consisted of 22 participants, with a gender distribution of 17 (68.0%) male and 8 (32.0%) female, and an age range from 21 to 82 years (mean age: 48.3 years). The sample included 3 affected citizens (12.0%), and 22 frontline disaster workers (88.0%), of which 8 volunteers (32.0%), 3 general practitioners (12.0%), 2 emergency room nurses (8.0%), and 1 firefighter, psychosocial manager, sociologist, city councilor, and insurance company employee (each 4.0%, respectively). Affected citizens and local frontline disaster responders were predominantly from Trooz (N=9, 36.0%), followed by Verviers (N=2, 8.0%), and Liège (N=1, 4.0%), while others were from municipalities outside the affected areas including three from Ghent, two from Genk and one person from Boom, Limburg, Oosterzele, Kessel, Wasseiges, and Kemmel.

Interview number	Function	Self-reported gender	Place of residence at time of 2021 flood	Interview date (month.year)	Age (in years) at time of interview*
1.A 1.B	General practitioner	Male	Trooz	06.2022 05.2023	47 48
2	Acting psychosocial manager	Female	Limburg	06.2022	35
3.A 3.B	Emergency room nurse	Male	Trooz	06.2022 05.2023	57 58
4	First responder: City councillor	Male	Trooz	06.2022	47
5	Social Services Director	Male	Trooz	06.2022	60
6	Humanitarian Organization Lead	Male	Trooz	06.2022	52
7	Regional Emergency Coordinator	Female	Trooz-Sprimont	06.2022	48
8	Affected citizen	Female	Trooz	06.2022	76
9	Affected citizen	Male	Trooz	06.2022	82
10	General practitioner	Male	Kemmel	05.2023	67
11	Firefighter and paramedic	Male	Boom	05.2023	58
12	Sociologist	Female	Liège*	05.2023	38

13	Volunteer	Male	Boom	05.2023	58
14	Volunteer	Male	Kessel	05.2023	50
15	Volunteer	Male	Oosterzele	05.2023	25
16	Volunteer	Female	Gent	05.2023	23
17	Volunteer	Female	Genk	05.2023	44
18	Volunteer	Male	Wasseiges	05.2023	55
19	Volunteer	Female	Gent	05.2023	25
20	Volunteer	Male	Genk	05.2023	52
21	Insurance company employee	Male	Verviers	06.2023	MD*
22	Diving team fire department Ghent	Male	Gent	11.2023	39

Table 1: Participant characteristics that were accounted in the assessment

Table legend: Abbreviations: MD: missing data; *We verified their age on 01.2025.

* indicates the place of work, not residence of the participant

3.2. Key Dimensions Related to Psychosocial Impacts from Participant's Experiences

The data analysis revealed eight recurring themes across participant narratives (see Figure 3), reflecting the multifaceted psychosocial impact of the 2021 floods. These included: the emotional toll on survivors (n = 18, 81.8%), disaster-related stress among frontline responders (n = 11, 50.0%), gaps in local preparedness and health response (n = 16, 72.7%), community-level solidarity and informal support (n = 16, 72.7%), financial and insurance-related barriers (n = 13, 59.1%), socioeconomic vulnerability and the compounding effect of COVID-19 (n = 11, 50.0%), criticism of formal humanitarian aid (n = 8, 36.4%), and substance use among marginalized groups (n = 3, 13.6%).

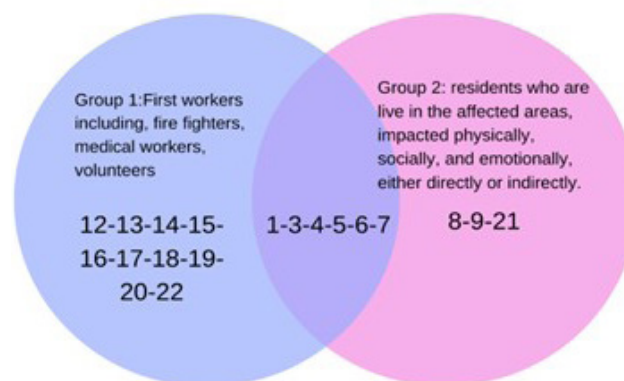


Figure 2: Venn diagram showing the distribution of participants based on their location and role. Participants were categorized by whether they were residents of the flood-affected area, individuals arriving from outside regions to assist, or local residents who were also actively involved in the post-flood response.

Theme	No. of Participants (n)	Short Explanation / Example
Lived Experience of the Disaster: Emotional Reactions and PTSD in Citizens	18/22	Participants described fear, loss, and trauma; many showed signs of psychological distress and difficulty returning to normal life.
Psychosocial Impact on Frontline Responders	11/22	Emotional burden, burnout, and stress reported by healthcare workers, volunteers, and other disaster responders.
Socioeconomic Status & COVID-19	11/22	Lower-income participants faced longer recovery; COVID-19 compounded access to services and mental health strain.
Financial & Insurance Barriers	13/22	Participants struggled with coverage gaps, delays, or total lack of insurance, contributing to long-term stress.
Substance Use	3/22	Substance use as a coping mechanism; cases of relapse and heightened vulnerability.
Community-Level Solidarity	16/22	Informal support networks and volunteer efforts played a vital role in emotional recovery and basic support.
Disaster Preparedness Gaps at the Municipal Level and Local Health Response	16/22	Participants noted lack of local preparedness, delayed response, and overwhelmed health services.
Criticism of Formal Humanitarian Aid (e.g., Red Cross)	8/22	Complaints included delayed aid, poor coordination, and lack of contextual understanding from formal agencies.

Table 3: Frequency of key dimensions mentioned by participants.

3.3 Psychosocial Impacts of Disaster

3.3.1 Lived Experience of the Disaster: Emotional Reactions and PTSD in Citizens

Not one participant, either affected residents, health professional, relief crew or volunteer, described being unaffected by what they experienced during or after the flood. Several participants described difficulties sleeping, restlessness, anxiousness, nervousness, people who “are really depressed and have very often given up hope” (Volunteer, P17). A General practitioner (P1.A) said that people are going through some type of trauma that has not come to the surface yet as “*there is no faith in the future*’ and ‘*they feel a little bit desperate, or they cannot really put a word on what is not going on, even though there are so many things that can explain that it is not going well.*” The sociologist (P12) stated that the experience of having a huge magnitude of flood is not easy for people to talk about: “*That was more than 6 months afterwards. (...) It was still difficult for those people to talk about those moments. Because that was so heavy and traumatizing.*”

Negative feelings were not only reserved for the impacts of flooding, but also for the formalized response effort. A psychosocial manager (P2) reported that citizens were “*actually very disappointed in [authorities] and very distrustful. And it is very difficult to get through that distrust with assistance, because you arrive too late.*”

Communication issues exacerbated the effects of the flooding, as internet and cell phone communications were inaccessible at different times, contributing to feelings of isolation. The general practitioner (P1.A) described the lack of communication, bringing them “*a lot of anxiousness, since we are not used to that at all anymore. [...] when everything is broken at the same time, you feel completely isolated.*” They further explained the overwhelming devastation caused by the flood and its enduring consequences for the village:

“Considering what was ruined in the valley, it was really [...], shocking and difficult for people to process those two aspects. I can imagine that people who no longer live here cannot even comprehend what it is like now. Everything is in stone construction, and rebuilding will take years and years. It has been years already, and there is still so much to do. I think there is a sentiment of abandonment among the people” (General practitioner, P1A).

Their account underscores not only the immediate destruction caused by the flood but also the prolonged challenges of recovery and reconstruction, leaving residents grappling with a sense of isolation and neglect.

“I think people, at some point, what was telling us on the ground, it was not compensation because of the floods, it was just compensation because nothing is moving forward in the house, (...) ‘because my walls are always wet, because the mushrooms are growing, because I cannot do anything until the expert comes by” (Regional Emergency Coordinator, P7).

Furthermore, one of the affected residents who mentioned social destruction said, *“My little pleasure was the flea market season for second-hand dealers. Everything is gone”* (P9). The heaviness of witnessing the destructive impacts of the flood and losing material belongings of people and children was heavy on people since they could not do anything but just watch.

“Because in the end everything is dirty. (...) children, the few who were (...) [weeping] because the only doll that, (...) they had a bond with [was] gone. So those [people] just have nothing left. Those [people] are just standing there watching” (General practitioner, P10).

Additionally, another affected resident added the fact that living with devastating traces of the flood does not allow people to move on:

“What is most annoying is when you go somewhere, and you are told to live (...) or even too much. Ah, floods and how I often say that (...) It’s gone; it is over a year ago. We did not talk about it anymore (...) at home, bothers me” (P8).

In addition to that, the regional emergency coordinator (P7), interviewed in June 2022, added their discomfort because the effects of the devastating floods were still visible on the roads. On the other hand, people still live with the impacts of the floods, which does not let them move on afterwards.

“I do not know how things are going today, but I remember that in February and March, it was still depressing to drive around the Vesdre Valley in a car. It was grey, this room, it was still full of piles of rubbish, of houses emptied everywhere. Well, it is hard in these conditions. Every morning, you get up, you are thrown into this bazaar with gutted streets.”

Another complaint with the formalized response was the unequal distribution of flood responses, creating tension among affected communities in some regions that did not have easy access. In La Brouck, for example, people did not receive help. A volunteer general practitioner (P10), explained that by not covering every part of the affected region and not being visible enough by former responses created feelings of isolation and abandonment.

“(...) so that is still the biggest problem (...) that that is a hamlet that means nothing towards elections (...) in Trooz they have had a huge amount of misery, but the king has been there, the prime minister has been there, the interior minister has been there, and (...) everyone was standing there. (...) I am happy for those people. And in Chaudfontaine, it is the same (...), but it always proves the same problem. (...) There [La Brouck], you don’t have psychologists in that village, you do not have doctors there in that village, in that hamlet. There is nothing (...), so you cannot rely on anyone either. And that was the biggest difference between (...) the other floods I experienced” (Volunteer, P10).

3.3.2 Secondary Emotional Burden in Healthcare Workers

Four frontline disaster responders spoke about the feelings they experienced during and after the flooding. They described the impact as “heavy and traumatizing” (Sociologist, P12), feelings of responsibility (Diving team fire department Ghent, P22), being unable to function (Acting psychosocial manager, P2), and changing them (Volunteer, P14). A general practitioner (P1.A), when asked about the lasting impact one year later, said:

“I had a lot of difficulty going to sleep because I was listening to the river all the evenings. I used to sit down in (...) the room and (...) I was listening to that river, and it was quite (...) anxiousness.”

It is important to highlight that among the citizens affected by the floods, despite being affected themselves, they took it upon themselves to help others. Many individuals, either due to their professional skills or personal capabilities, stepped up to assist during the crisis. The frontline disaster responders in the area were not affected by the floods directly, but what they have seen in the disaster area affected them nonetheless. Emergency Nurse (P3.A) explained what they saw: “I admit that it was extremely shocking.”

Experiencing “the psychological impact of seeing all this population devastated and the health needs because of the wounds of the population” (General practitioner, P1.B) was difficult for them, one firefighter (P22) who worked for 36 hours on the recovery effort expressed their feelings: “I feel that I sometimes find it difficult to let go”, referring to the challenges the fire brigade team faced during rescue operations amid the flooding.

3.3.3 Work-Related Stress Among Frontline Workers

A psychosocial manager (P2) and one of the volunteers (P14) discussed the aftermath of the flood, which has had a distressing impact on people since institutional buildings are damaged. The collapse of the trusted system has left people unable to function effectively during the emergency response.

“Often because if you live here and work in the municipality, you are going to feel directly affected or you yourself have a property where that is a problem at that time or you undoubtedly have family involved. So, the involvement is a difficulty and the fact that they are in infrastructure that is probably no longer ideal due to the fact that electricity does not work, the building is down, people themselves are no longer as self-reliant and mobile” (Psychosocial manager, P2).

“The municipality, the employees, the clerks and workers themselves were also impacted, (...), so more than half the staff was unable to come to work just like that. And the mayor also said to us (...) ‘I have, I have pennies, but I have no hands. I do not have anybody to come and help me’. And of course, as, (...) a mayor and such a municipality that is so affected, you cannot do anything right” (Volunteer, P14).

Frontline workers who live in the affected region, as well as those who came from other regions to the affected areas, face difficulties in managing distress during and after the floods. The sociologist explained, based on their interviews from the affected region, and said:

“A lot of them have had burnout. A lot has (...) been very difficult with that period. When I did that debriefing that was not just feeling with the civilians, but still almost quite a lot of people who had also been in the crisis management” (P12).

A Ghent fire brigade team experienced difficulties during a rescue operation and experienced anguish after losing some members in water. The firefighter described the transition from being part of the rescue crew to victims, highlighting the difficulty of coping after such an incident. The firefighter (P22) from the Ghent Brigade explained the situation; they did not have a lot of information, but they received a call for a saving operation, so they headed to the flood zone, “but are those rescues under water,

on the water (...) that was not clear, so we actually got everything that we could both dive and do surface rescue". While they arrived at the zone, they started to save people on the roof of their house with a white sheet hung from their ripped boats. As they completed their first mission, one of the boats headed to the other side of Pepinster, the firefighter (P22) noted they, as a team leader, followed them from the land. As they kept each other updated, the team leader explains what he then heard: "Then at one point over the radio, the [first person mentioned from the team] (...) actually [said] a mayday (...) 'We have a problem. (...), a bag has been turned, the propeller has turned, and the engine has stopped,'" as that happened the team leader called back to the office and reported the problem with the firefighter team boats and it took a few hours to hear back from the rest of the team.

"Then there was radio silence and then I knew okay those people are in the water, I also reported that to the officer because they were still busy with rescues there so that one group, just after the first mayday I asked [second person mentioned from the group] on the other boat of look are you in the possibility to go to the other side of Pepinster to see [first person mentioned from the group] there, the answer to that was 'no we will not get there'" (Diving team fire department Ghent, P22).

In a critical situation, one boat was helping in rescuing individuals while another team's boat capsized, resulting in them incapable of providing help to their team members. The firefighter (P22) further explained that moment: "(...) now we are victims, now we have to get help from (...) people and I have kept aloof in my thinking because (...) we are now the victim, and we have to be helped." The team that got lost in the water had three civilians with them, which made it even harder to act or decide what to do next.

"You have no control over it. I had asked for control downstream to go and look at those bridges to know where those people are. And that was a few hours of (...) unclear a lot of messages from witnesses (...). Later two of the members were saved on the water and another one was able to climb to a tree also saved by the climbing team and at that moment they learnt there are 3 civilians also with the fire fighter team when their boats overturned and they went missed" (Diving team fire department Ghent, P22).

After a long time and a lot of effort, they gathered their team. "What the downside was (...) the press was there faster than (...) we were so there were already interviews (...) on TV of my people but I did not know where they were at that time." They were unsure of the team's status, and the press' presence could lead to misinformation.

However, after the 36-hour intervention, they could drive back home and ensure every member was unharmed physically and receive treatment, if needed. The team leader later emphasized that receiving psychosocial support from fellow firefighter teams within the same region, in addition to professional psychological assistance, is crucial in fostering a sense of being understood following the demanding experience of a rescue operation.

"But those people from Wallonia (...) who heard that we have been there too, they had also seen our boat pass by and (...) they thought too because they have (...) seen 14 people died. They say 'I have seen many people die, houses have also collapsed, including truck drivers', so they thought those firefighters had also had the same fate. Reached out our network to someone who is perfectly bilingual because (...) as a Fleming if you are not perfectly bilingual going to debrief people because (...) words are important (...) and it would be a shame if it lost in translation was, so that person has been helped, I still meet him regularly, I have to say those people are very grateful and yes that does create a bond" (Diving team fire department Ghent, P22).

However, the unexpected adverse events during the rescue mission had long-lasting psychological effects on the team. The team leader also shared that one member, who wasn't on the boat during the mission, struggled for a long time.

"Because I was on the other side and they were alone [in] the truck, the rest were on the water, they actually wrote everything down, they repeated the radio communication in their sleep for a long time, about that woman, that in their sleep they actually repeated everything that was said over the radio. This year it also had a dip, it

also failed, there was another problem too, an alcohol problem too, that does not help when you have to process, that you are quite a heavy drinker, but they stopped doing that now (...) which is very good news (...) because that only helps” (Diving team fire department Ghent, P22).

The firefighter continued to talk about how another team member dealt with anxiety and PTSD in different ways after the flood intervention.

“As [the second member mentioned from the team] has said that they followed some kind of light therapy to process it better, (...) the rest just managed to get that right with conversations. [the second member mentioned from the team] always used to have a sparkle in their eye and they lost it for a while, now that is starting to come back a bit more, cheerfulness” (Diving team fire department Ghent, P22).

Besides the psychosocial impacts of the rescue operation that fell short of its objective, there were also legal issues due to the loss of three civilians, as team members had to release them to save themselves.

“2 (...) firefighters fell in a fire in Brussels. The fire brigade report that described that death was 10 pages (...) to do a comparison with the Netherlands, (...) also once had a deadly fire where I think 4 or 6 firefighters died. That was within the month there was a whole study (...) of 62 pages, that was then the shortened version (...) about what one could do to avoid it (...) apart from not pointing fingers, but just saying look that has to be better (...) And Belgium has the culture to be afraid that people will point the finger (...) that is your fault and then there is no communication about it” (Diving team fire department Ghent, P22).

On the other hand, regarding lessons learned, there has been no improvement or interaction at the policy level, which the firefighter team leader found unconstructive for future interventions. The firefighter (P22) compared this incident with one that occurred ten years ago, stating that the lack of communication is detrimental to improvement.

3.3.4 Pressure to Help: Emotional Load on Volunteers

Another narrative emerged that as time went on and aid groups came less frequently, “you know also after a certain time that [courage] diminishes. [...] There are many groups that have stopped” (Firefighter and paramedic, P11).

This theme came up, for example, in discussions with the volunteers, who stated the importance of solidarity and helping people in the affected zone to bring them together. Since short-time voluntary response could not be replaced by long-term recovery and rebuilding, leading to volunteers’ dedication to start to decrease, as one of the volunteers (P14) defined: ‘and yet you have to start drawing a line as a volunteer.’

Volunteers stated that there is a common dying out among volunteer organizations as they turn to focus on their own needs, since some of them are facing burnout.

“We have been at it for two years. That really does have a lot of impact on my private life now or it has been enough. And I do hear that in other voluntary organizations as well. That it is quietly starting to die out (...)” (Volunteer, P17).

The volunteer general practitioner also stated that working as a volunteer for a long period of time also poses a financial problem, which is also a significant limitation:

“I have a limited [budget], I have to take care of the finances myself, I have to take care of the purchases myself, I have to take care of the transportation myself, the operation myself, (...) as an individual” (General practitioner, P10).

3.4 Mediating and Indirect Factors Influencing Recovery

3.4.1 Socio-Economic Status

Several frontline workers discussed how the flooding was worse for affected individuals influenced by the social gradient in health and other social determinants, including “*the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life*” (WHO, 2019), which shape health outcomes. The city counselor described the affected area in the Vesdrey Valley as: “*It is the poorest who live near the riverside and who are most [impacted], not necessarily the most beautiful*” (P4). The general practitioner (P1.A) mentioned the economic gap in society, alongside the lower socioeconomic status and geographic location of housing, which indicates a social gradient that creates social inequality and may have resulted in people with less means to be more vulnerable to the effects of the floods:

“(...) The people that are in the valley are essentially the poorest people of the valley (...) of the village. There is a social gradient from the valley to the top, like in almost all our countries. (...) You have the lowest class population near the Meuse and then the more you go up, the more you have engineers (...). So, people are doubly or triply (...) impacted in that situation.”

Participants also stated that the flood worsened pre-existing psychosocial issues, forcing residents to relocate. Additionally, drug use among the youth linked to these issues was observed in the interview with the frontline disaster responder living in one of the most affected areas:

“There were psychosocial problems, but not psychosocial problems linked to the disaster itself but linked earlier to the sociology of the group, which found itself (...) in the Valley. (...) All these people were obviously taken from their homes in the valley and were put in a reception centre. Did you think that problems with caring for children had arisen? It was necessary to find educators; there were drug problems that appeared and already existed in the valley but were concentrated in other places” (Emergency room nurse, P3.A.).

The acting psychosocial manager (P2) highlighted the precarious living situations of people in the area and to what extent this impacted them in the aftermath of the flood:

“What is very noticeable is (...) the people who already live in precarious living conditions have it even harder. So, municipalities that are relatively well-structured (...) all middle-class people (...) those have a social fabric; those actually get supported relatively quickly, (...) say, ‘We do not need extra help; we get it done ourselves.’ You see that the neighbourhoods hit hardest are often the more precarious ones that already have a social target group, who already have more difficulty.”

3.4.2 Mediating and Indirect Factors Influencing Recovery: The Compound Effect of COVID-19

Global events, in addition to pre-existing socio-economic challenges, have significantly impacted those already struggling psychologically and financially following the 2021 flood. Describing the compounding impacts, a general practitioner added:

“The flood is something on top of COVID. So, people have been impacted by COVID and isolation and no, (...) social contact or whatever. And then now you have the prices of the energy that continue to go up with the war in Ukraine. (...) You have all sorts of different problems that are going on top of one another” (General practitioner, P1.A).

The flood that occurred in 2021 exacerbated the psychosocial health challenges faced by residents who were already dealing with the impacts of COVID-19, as noted by the sociologist:

“The context was very difficult because that was a COVID though, so we were already in a crisis context before [the flood] (...) started. (...) What I know is that (...) [Covid](...) still had a really big impact a year later” (P12).

3.4.3 Financial and Insurance Challenges

Participants also stated that the flood severely impacted people's psychosocial and financial well-being, due to major damage to their homes and repair costs, particularly among economically disadvantaged people. Despite their efforts to make their homes livable again, they face financial difficulties and are unable to afford the necessary funds to rebuild their homes, hindering their ability to return to normal life.

"So, the first days (...) in such a disaster (...) is really survival, food and drink and a place to stay. (...) Once (...) that acute situation (...) is over, then it is (...) for people, then a longer-term housing search (...). But that is also for people living in houses that are all (...) damp, wet (...), where (...) all the furniture is broken and rotten, everything is thrown outside. Then also immediately (...) the financial worries start. That happens very quickly"(Volunteer, P18).

Some volunteers who were active in the post-flood response noted that many affected residents were unable to get the damages covered by insurance, leaving them feeling frustrated and abandoned in their efforts to recover. One of the volunteers mentioned that the insurance companies that came for due diligence after the disaster were insensitive to the sufferings of the people and did not follow a proper approach.

"We actually hear from a lot of people that, first of all, it took a very long time before the insurance experts came by. And when they did, they often underestimated the damage to the house. (...) there are also a lot of people who say, we were put under pressure that the insurance company said, "look if you sign for agreement now, your example will get €30,000' If you necessarily want the amount, we estimate damage. Yes, you will have to wait a long time, and we have heard from some people that people have allowed themselves to be put under pressure because of this and realise afterwards that, yes, we actually allowed ourselves to be pushed around a bit, because we were actually entitled to more" (Volunteer, P17).

Following a flood disaster, affected citizens sought home repair, but insurance companies prioritized their own interests and did not provide solutions tailored to the needs of the affected area, according to participants who witnessed the flood-affected area's experiences.

"The only thing that happened there was that there were a lot of fast people, rogue people, supposedly from the insurance company to get someone to sign. And there it said in the contract, in small print of course, that they were not allowed to work with anyone else for the insurance. They were tied up and they then actually got really ridiculous prices for that property. But then whatever happened. Of course, there were people who did not agree [with] that. They then had to start with a counter-expert. (...) everything was then actually put on the long line. Time passed, (...) people came hopeless, they got nowhere, (...) people got sick, people moved, they then sold their property" (Firefighter and paramedic, P11).

"So, at the beginning (of the post-flood response), there is a lot of hope and then after the (affected) people (...) say, there you go, we will not have anything. (...) because in the end, they opted for only damages and what is insured." (First responder: City councillor, P4).

"People were quite distraught because there was a lot of administrative work to do to reach the insurance companies and get reimbursed (...) you had complications over complications (...) and all these administrative complications were (...) another layer on the difficulties like trying to scrape the walls, trying to evacuate all the rubbish and waste and, and things that could no longer be used" (General Practitioner, P1.B).

An insurance company employee (P21) explained how the insurance coverage policy in flood-prone areas differs:

“If you have a house in a flood zone, we apply the first text (...). What that legal text says for example we do not reimburse rent cover; we do not reimburse damage to the garden and everything outside the building. And company to company they say, with us it is a bit wider, we do cover the rental cover, we do cover the garden, we do cover the fence (...). So, if (...) you have your house in a flood zone, you are going to have the worst text in your policy and if you do not live in it you are going to have the wider text for the same price (Insurance employee, P21).

Commenting on insurance policy, the insurance employee said: *“you are actually taking a risk by living in a flood zone [...] as you then have lesser coverage” (P21).*

There are also examples in which people benefited from insurance payments, which depended *“on insurance per insurance company [...] or the expert you get for you. There are also a lot of people who feel abandoned by the government, (...) there are also a lot of people who have been cheated to some extent, by the insurance company. The people who ended up well with their insurance, I do feel that those are the people who got their lives back on track quite quickly” (Volunteer, P17).*

Likewise, damage recovery speed also differed between citizens that live in the same street:

“There were companies where people were well insured. The companies have been of their word. They fulfilled everything. (...) that was the confronting thing. [We] had addresses where the house was still just gutted, nothing had happened there yet. And in the house next door they were already installing the Gyproc [gypsum plasterboard], painting (...) And you see happy people in one house, where everything is in order. And in the other house (...) it is a catastrophe” (Firefighter and paramedic, P11).

On the other hand, some insurance companies applied the same principles to all houses in one street, irrespective of damage differences:

“There are insurance agents who came, and they calculated the price, the intervention of the insurance per street, so they went into a house who calculated the damage there and they said, that comes to €40,000. Okay, all the houses on this street get €40,000. (...) But you cannot do that” (Volunteer, P18).

For those who were poorly insured, the situation escalated further to health problems:

“So (...) those [impacted] people have had an incredibly hard time. Moreover, many of them were very poorly insured, [or] not insured and (...) they lost everything (...) and they ended up in huge financial problems. Then what also happened, the health problems. Because those houses were damp, were moldy” (Volunteer, P18).

This also played out in terms of psychological impact:

“to downright depressive states, suicidal. (...) I have helped a number of victims who are no longer there now. (...) for example, were not eligible for insurance and then lost everything. There are (...) two or three [people], I think (...) who are no longer there, but mostly the resignation (...) and today, two years later (...) the impatience is mostly primary among people” (Volunteer, P20).

Another volunteer (P13) described an elderly man who got diagnosed with cancer right before the flood events and, due to high healthcare costs, stopped paying for fire insurance and then was displaced post-flood to a caravan:

“So that man had received that diagnosis just before the flood. Well, he had always given the pennies to (...) the tests and to all those things, so he had not paid [for] insurance anymore (...)! So, there they will have those

stories that you think, well, (...), that cannot be right? What stayed with me, I thought, was the fact that the man with throat cancer was totally abandoned. He is still in that caravan” (Volunteer, P13).

3.4.4 Solidarity & Community Support

A number of grassroots organizations also popped up, aiming to provide advanced support beyond first aid. This was the case for members of the Kortrijk fire brigade who voluntarily assisted people reconstructing their houses, given many were unable to restore their houses due to delayed insurance procedures.

These grassroots organizations took on a great deal of responsibility and made arrangements to voluntarily help impacted people, such as collaborating with the local community to identify citizens in need, which took considerable effort. It involved contacting other groups, organizing via social media, rotating volunteers biweekly, providing transport, and arranging food and construction materials. Maintaining such grassroots efforts demands strong commitment. As volunteer P11 noted, *“They made a difference to everyone there. Even now, nearly two years later, we are still there every weekend with our team.”*

Another volunteer (P13) commented that the long duration of their work also intensified their bond with affected citizens:

“We cleared cellars and houses, chatted with people. There was a team of 150 men and women [working] there at one point. (...). Of course, that has now been phased out, (...) the work is less and less. But there are still people who always go there regularly to help. But (...) then, a bond that has developed among themselves. I also still have very good contacts with about a dozen residents. Yes, that will continue, I think.”

This was also confirmed by a volunteer firefighter and paramedic (P11): *“Bonds have been formed there, the friendships there, that is incredible, (...) We even had (...) [one] local pub there, where actually the Flemish Lion hangs next to the Walloon Rooster (...).”*

The clean-up efforts provided a sense of community amongst affected citizens and volunteers in the aftermath of the floods. Words like enthusiasm, positivity, good ambiance, support, and strong network were used several times to describe the atmosphere with the volunteers. Participants described it as important that *“people needed a place to vent”* (Volunteer, P17) and a man who *“got through their depression by helping others”* (Firefighter and paramedic, P11).

Another volunteer (P13) also stated that helping people not only created a connection with them, but also allowed them to open up and express themselves:

“And every week I would get the same stories. They just needed to be able to vent. And that is the whole point. It [is the act of] being there. Just from our team. That was the number one incentive for them to keep going, so that was (...) worth it.”

They also described that these positive experiences often were related to food delivery, with an emergency nurse (P3.A) saying, *“there was nothing at all and the only way for people to have a little contact was with food (...) in the end.”* This was confirmed by a volunteer (P17), who said: *“We were not just a food team, but people really came to tell their stories. Chatting, yes, that [is] also a piece, almost a psychological function.”* The head of the humanitarian organization (P6) affirmed the importance of having a food dispatchment center to maintain feelings of solidarity among affected citizens and frontline workers, and for social cohesion: *“Lately, we have the idea of offering a moment of conviviality, and then people come back to share with each other. This is a need that was clearly identified at the end of the crisis.”* Other community members felt differently as time passed from the situation, feeling that *“they [relief services] did not involve us enough. There was never actually any consultation or communication with us about what you actually still need effective help for?”* (Volunteer, P17).

The psychosocial manager (P2) highlighted the importance of simply being there for people and what it means to them, especially when their sense of normalcy is disrupted. It is not necessarily about aiding or seeking justice, but about offering support and presence:

“On the other hand, by coordinating other non-psychosocial assistance, you ensure that the psychosocial distress drops a bit, because psychosocial distress is linked to insecurity, the feeling that you are not being helped, the feeling that you are not recognised” (Psychosocial manager, P2).

Participants also commented on the sense of solidarity during and after the rescue action, with a sociologist (P12) saying: *“If I have to remember one positive aspect it is the solidarity between residents and the people [volunteers] who came from all over the country.”* A local emergency nurse (P3.A) added: *“I had the opportunity to work with the Antwerp fire brigade, the Ghent police with the West Brabant fire brigade and (...) we personally discovered what the real Belgium was (...)”*. One of the affected citizens (P9) described the volunteers as *“young Flemish people especially. (...) Thank you very much. And it will not forget anyone. (...) [especially] people who came from Bruges.”* One volunteer (P17) also described volunteering bringing meaning to their life: *“because I myself notice that it gives so much meaning in your life and so much satisfaction.”* In parallel, a resident emergency nurse (P3.A) stated *“So, frankly, (...) I, personally, can take satisfaction from what we did there. First of all, I was very proud as a citizen to help my municipality because I like my municipality for several reasons.”*

3.4.5 Substance Use

Throughout the interviews, substance use emerged as an exacerbation of vulnerability:

“People who were clean for years, for example, and in the meantime drink a lot again [...] So I think people who were already vulnerable have become even more vulnerable as a result” (Volunteer, P17).

Another critical dimension of substance use is its role as an accessible coping mechanism. The general practitioner stated how individuals turned to drinking to alleviate anxiety or to momentarily escape the overwhelming emotions caused by the flood.

“People are starting to drink a little bit more and so to lower down their anxiety, even though it is not a good idea, because the second time, you get more nervous. You sleep; your sleep is disturbed when you drink alcohol” (General practitioner, P1.A).

Also, participants highlighted challenges faced by individuals with substance dependency, including difficulties in accessing necessary medications, emphasizing that the oversight of proper prescriptions by their doctors was often disrupted after the flood since *“all the pharmacies are also in the central part of the village and were also flooded”* (General practitioner, P1.A). Including this statement, one social services director (P5) also explained the hardship of reaching pharmacies:

“For medication, I was in charge of about 300 people who were in refugee centers, well, about forty people on methadone, a product that I know well since I work with drug addicts. (...) And how did we go about redistributing the methadone? We did not have any, we had alcoholics who were obviously in need. So, we had epileptic seizures, we had a lot of problems, and we could not get the medication or the prescriptions. So, we got (...) very upset.”

Additionally, they mentioned that the visible presence of individuals with substance or alcohol problems posed challenges to social cohesion, particularly in a post-disaster context where unity within the community was crucial *“quite a lot of fear with toxicology people, people on drugs or alcoholics (...) who were in communities”* (General practitioner, P1.A). There were also difficulties in arranging hospital referrals for such individuals, often requiring personal intervention and discussions with the appropriate authorities to facilitate their care, as the general practitioner mentioned:

“Since you had people with mental disorders and alcohol problems and drug problems, they were maybe making it difficult for a community to gather in one space. So, we had to try to find solutions, sometimes go towards hospitalization” (General practitioner, P1.A).

A Social Services Director (P5) also mentioned that people with alcohol use disorders (AUD) and psychiatric conditions are marginalized, and placing them alongside affected residents created additional challenges, particularly when it came to hospitalization.

“The doctor said to me, ‘You cannot put them [people with alcohol use disorder and psychiatric conditions] in with the other disaster victims (...) It is not going to work.’ So, we will have to open a classroom. It has got me (...) really upset. Because alcoholics and psychiatric patients are stigmatized.”

3.5 Organization of the Psychosocial Response and Challenge in Disaster Response

3.5.1 Organization of the Psychosocial Response

The psychosocial intervention plan is structured across federal, supralocal, and local levels. At the federal level, the Health Inspector and Psychosocial Manager oversee strategic coordination. The Coordinator of the Psychosocial Intervention Plan manages operational roles, liaising with supralocal actors (e.g., the Red Cross) and hospitals. At the local level, responsibilities are distributed among centers for overnight stay, reception centers for non-injured victims, and local health workers (general practitioners and psychologists), all providing direct psychosocial support to affected citizens and aid workers. Discussions around disaster response often invoke the broader context of climate change.

However, the data reveal that participants’ lived experience of the 2021 floods was more strongly shaped by perceived unpreparedness and institutional failure than by climate-related concerns. Among the 12 participants who were asked directly about the relationship between climate change and the psychosocial impact of the flood, 92% acknowledged climate change as a contributing factor. Yet, 75% identified unpreparedness, such as inadequate crisis management, lack of early warning, and infrastructure failure, as the more immediate and emotionally distressing cause of their suffering. This distinction points to an important issue in disaster response: while climate change may set the stage, it is failures in preparedness and coordination that amplify psychosocial harm on the ground. These perspectives are summarized in the table below.

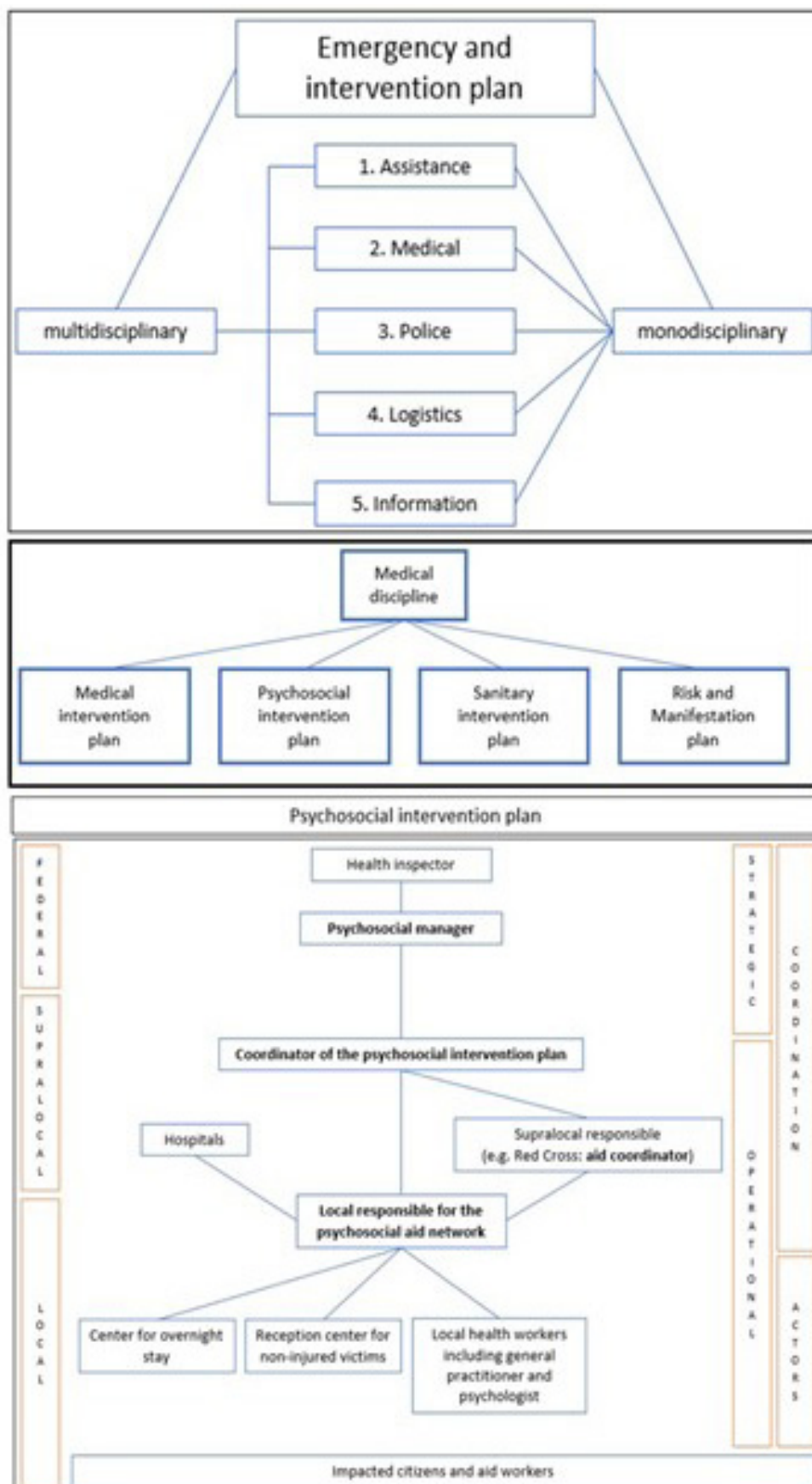


Figure 3: Emergency and intervention plans including distribution of roles in psychosocial intervention after floods.

Participant	Mentions Climate Change?	Highlights Unpreparedness?	Main Driver of Psychosocial Impact
General practitioner P1	Yes, but feels abstract for locals	Yes - mentions feeling abandoned, lack of support	Unpreparedness
Psychosocial manager P2	Too early for victims to reflect on climate	Yes - emphasizes unsafe, precarious living conditions	Unpreparedness
Emergency room nurse P3	Possibly influenced intensity	No strong comments on preparedness	Neutral / Mixed
Firefighter and paramedic P11	Yes, but stresses human error more	Yes - lack of action	Unpreparedness
Sociologist P12	Yes, but distinguishes it from the trauma of the disaster	Yes - sees event as traumatic, not just climate stress	Unpreparedness
Volunteer P13	Yes, but paired with human error	Yes - strong critique of failure to act, cover-ups	Both (but more on Unpreparedness)
Volunteer P15	Possibly, not certain	Yes - recognizes infrastructure and land use as key	Unpreparedness
Volunteer P16	Climate stress noted by outsiders	Yes	Unpreparedness (especially among affected locals)
Volunteer P17	Limited knowledge, but some concern	No direct mention	Neutral / Mild climate stress
Volunteer P18	Yes - cites environmental degradation	Yes	Both
Volunteer P19	Yes - personal wake-up call	Yes - notes dependency and anxiety after flood	Climate-linked, but preparedness relevant
Insurance employee P21	Yes - acknowledges change but vague	No focus on response or readiness	Neutral / Climate recognition without depth

Table 3: Interviewee Perspectives on Causes of Psychosocial Impacts from the Floods

3.5.2 Disaster Preparedness Gaps at the Municipal Level and Local Health Response

One of the key themes emerging from the data is that in the flooded area, not enough preventive measures were taken, leaving inhabitants highly impacted. A primary reason for this seems to be the absence of a culture of awareness. As a Liège-based sociologist (P12) said “*Belgium has not had experience on this scale of disaster before I do not know what other extreme event that we can compare to [this one] actually.*” Furthermore, A Trooz-based GP (P1), explained the local government was too late to warn citizens since they did not expect the 3-day rainfall to overflow the river and rise so high.

“Here in Belgium, we do not have that culture. (...) Maybe in Flanders, but not (...) in Wallonia. So, people just stayed in their house, and we did not have alerts from the authorities because I think nobody had the right information at the right moment in order to organise that. And since it went so fast, at one moment we could not move anymore as (...) everybody was trapped in their house. It was more, more dangerous to go out than to go on the first floor, second floor, even though (...) we had known, if we had known that a little bit earlier, we could have asked the whole population to [...] just go on (...) top of the village (...)” (General practitioner, P1).

People caught unprepared for the rising water were trapped in their homes, and when the ground floors submerged, some had to climb their roofs to wait for rescue. A firefighter who participated in the rescue operation (P22), explained that *“the officer there said to look if a white cloth was hanging from the window, being the signal that people actually wanted to leave”*. An emergency nurse who also lived in the affected area (P3.A) explained that *“there were some [people] who stayed on their roofs for almost 2 days. More than 36 hours waiting for the (...) services, (...) who did not know, (...) how to intervene at that time for various reasons.”*

In a follow-up interview with the same participant in May 2023, they criticized the local government’s lack of preparedness to take precautions against flooding and warn the public in a timely manner, saying that slow decision-making in the event of a disaster would increase the impact of the flood and stressed that the procedure to be followed in case of a disaster should not be stuck in bureaucracy.

“We need to be able to decide to evacuate without wondering ‘Yes, but what will people say about my decision later?’. I evacuate; we [will] think about it later. And that is what is important. When we find ourselves in such situations, we make decisions before taking responsibility. But if the decisions are made within a framework that respects the recommendations. And somewhere also the logic when you see the water rising so fast, you evacuate. (...) It did not stop raining for days and days (...). We knew very well that it was going to end very badly, NOT to that extent, but at some point, the decision had to be made in relation to evacuation” (Emergency room nurse, P3.B).

A manager of humanitarian organization (P6) reflected on failures in crisis governance during the flood, emphasizing the lack of coordination and preparedness at the local level. They highlight the absence of the emergency planner (planus), who was on holiday, and the inaccessibility of crisis management tools (e.g., manuals, crisis center). The participant stressed that local actors like the mayor and Director of Social Services Organization were left to manage the crisis under severe emotional and logistical strain, with overwhelmed communication lines and insufficient support. They argued for a hybrid model of crisis management that combines external expertise (cool-headed professionals) with local knowledge:

“But for me, that is the question of governance. At the same time, coordination, whether it is health, (...) psychosocial coordination, (...) for roads, electricity, in short, all the coordination sectors. (...) if you only put people from outside, they do not know the area and so we really need to find a formula for crisis governance, a formula where outsiders are well structured. Someone who can see immediately (...), how we need to intervene calmly (...). Because we were totally overwhelmed, even emotionally, completely overwhelmed. So, you need people who arrive with a cool head, who have lines, eh, that is the planus normally, but who come alongside locals who know the terrain” (Humanitarian Organization Lead, P6).

Two frontline disaster responders (P1 and P3) are stationed in Trooz, one of the most affected municipalities, and were proactively mobilized through collaboration with local authorities and other necessary stakeholders to assist the community in various capacities following the flood. This included restoring the only available health center in the nearby area, conducting inspections, and engaging in fieldwork through patrolling (on foot or with a bicycle) to assess affected citizen’s needs and how to assist them. Some of these interventions were handing out posters to inform individuals about accessing medical assistance, directing them for administrative matters, as well as liaising with other hospitals to collaborate with healthcare professionals and coordinate their assistance:

“We have the opportunity to restore the community health center so we all repaired what we could repair in order to provide health care on Monday. So Saturday, Sunday we (...) had a lot of volunteers that could help us and on Monday we could open the center for all the population of Trooz or at least in one part of the village, because there were a lot of bridges that were completely ruined” (General practitioner, P1.A).

When they encountered difficulties accessing patient information due to power outage and internet malfunctioning, they proactively sought to resolve the technical problems through various pertinent organizations.

“When I say the first day, it is (...) the 20th of July, 2021, we managed to get the town hall back up and running with this precise detail, which is that there was more power, no connection.(...) medical records are computerized and therefore if they had no power and no internet connection, you have no [access to] file, it is the system residues well, so my mission at that time was to find out (...) gasoline [for] generator permanently. (...) I think it lasted between a week and 10 days. I had to bring in cans, et cetera. (...) I used the Red Cross which helped me very well” (Emergency Nurse - P3.A).

All post-flood interventions encompass a minimal area relative to the flood-affected regions. The participant noted that intervening in areas with compromised access to the center posed a distinct challenge due to the destruction of bridges connecting these locations.

“There are things we would not do in the same way. For example, evacuation plans. You see, (...) we have forgotten some areas, we did not have a map of our commune. (...) If we would [have] looked at the map, we would have said: here is the Brouck, it is going to be catastrophic because it is in a bend” (Social services director, P5).



Figure 4: Flood risk map of the Walloon Region (screenshot).

Source: Service Public de Wallonie, n.d., retrieved April 29, 2025, from <https://arcg.is/09W1Hn>. Copyright by Service Public de Wallonie.

Despite being indirectly impacted by the floods, the front-line worker participants in Trooz remained available to assist. In regions such as La Brouck, one of the hamlets of the Trooz, lies along the left bank of the Vesdre and at the foot of the river’s southern slope (Contributors aux projets Wikimedia, 2024). There was no assistance from the local populace, as everyone was affected either physically or in terms of their housing. One of the volunteers (P10) who is a general practitioner said: *“So you must know if you go from Chaudfontaine to Trooz, (...) that bridge was interrupted, so the only bridge we could take was a small bridge over the Vesdre to get to La Brouck”*, meaning reaching the hamlet from the outside was already difficult and the population there having hardship to help themselves. Although there have been floods in different parts of Belgium, a participant who had previously been involved in response to flooding in Dinant, Maasmechelen, and Ittre said that flooding of this scale was not expected when describing the damage in La Brouck and Trooz, where they were helping:

“The whole village, the whole hamlet, was completely ravaged. In Dinant, I had the advantage that [on] the higher parts, (...) people did not have any problems. (...) In Dinant, the hospital and the fire station [are] quite high up. So, we could call on that, (...) with warehouses we had no problem then. In Ittre, [it is] just the same. It is quite steep there. (...) you could use the upper part to help the lower part. But (...) there you had nothing because everything was flooded. From Chaudfontaine all the way across the bridge, all the hamlet was under water” (General practitioner, P10).

The floods also swept away many residents' identity cards, which is necessary to access electronic medication prescriptions. Therefore, some patients with chronic conditions were not able to retrieve their medications. In response, local health officials collaborated with pharmacies on higher ground to deliver medications based on physician-issued certificates, bypassing the need for ID. *"What was a priority was to ensure access to care, such as pharmacy, general practitioner and possibly to respond to certain acute problems"* (Emergency room nurse, P3.A). Simultaneously, efforts were made to re-establish contact with general practitioners and restore primary care services.

"We tried to set up mobile pharmacies because we no longer had any pharmacies in the whole of the commune. We were on the front line, we tried to get the mobile pharmacists to come, so you need dispensations, but we never got them. The region told us: 'It is not the region; it is the federal government'" (Social Services Director, P5).

Another critical issue faced was that mobile pharmacies were not authorized at the federal level, which caused problems as many pharmacies were flooded or damaged during the post-flood response and there was no structured contingency plan for medicines in case of disaster as people needed their medicines.

3.5.3 Criticism of Formal Humanitarian Aid (e.g., Red Cross)

One of the active stakeholders in the humanitarian response to the flood was the Red Cross, who were present in the field from the early days of the crisis, though their initial involvement was marked by uncertainty and lack of clear direction. As the Red Cross arrived at the flood zone, they primarily initiated a response with medical supplies since there was *"No treatment, no identity card, no health insurance company. Everything was in the water, and the professionals, the doctors in particular, had nothing left either since their offices were in the water too"* (Regional emergency coordinator, P7). Collaborating with AGEF (the Association of General Practitioners of French-speaking Eastern Belgium), a nonprofit association that brings together practitioners who speak French in the Verviers area, general practitioners worked voluntarily in the flood-affected area. To provide adequate healthcare, the Red Cross installed containers for doctors and set up tents with volunteers at locations where people could have social contact and receive treatment. Although such immediate action was vital, it also exposed deeper structural issues in the broader humanitarian coordination across local agencies.

One humanitarian organization head (P6) reflected critically on these shortcomings, noting that *"ten or fifteen days [were] lost"* in mobilizing food aid and other essential services. They emphasized that the absence of clearly defined roles and coordination mechanisms between formal actors and local institutions led to unnecessary suffering in the early days of the crisis.

The regional emergency coordinator (P7) expressed self-criticism about the deficiencies in coordination and the inadequacies in decision-making that occurred at the beginning of formal assistance efforts, which were caused by logistical challenges in managing unpredictable volunteer numbers across a vast region.

"The difficulty of coordinating people every day while they are volunteers and not knowing how many people [we] will have today. (...) So, the Red Cross never knows every morning how many volunteers it will have. (...). But here, in such a long and large territory, the difficulty was to ensure that people were listening everywhere, every day. In fact, they did not arrive very clearly. (...) there was also a whole one."

At the beginning of the intervention, there was uncertainty about the Red Cross' response due to internal coordination issues and the size of the area in need of help. Organizing food for first aid took a considerable amount of time, and it soon became apparent that the budget was insufficient. This type of aid requires collaboration with other stakeholders, and if that is insufficient, new partnerships should be formed to meet the needs of the affected area.

"For example, we had a logistical problem, but for the whole valley there were too many. I had only one vehicle to distribute, even 350 meals. This is insufficient. (...) travel was extremely complicated. It was therefore damaged, and the cost posed a real logistical problem. (...) I think that if we had to deal with events like this on a little more

regular basis, we would have to know the interventions of the Red Cross House. There are no procedures for that at all(...). There is no defined role” (Humanitarian organization head, P6).

There is an insufficiency of logistical support in the organization and distribution of food. The plan must include local alternatives for risk management in the event of accessibility by local stakeholders. Consequently, local stakeholders in the affected regions should adhere to a structured framework to implement directives provided by interested parties regarding food and transportation, maintaining capacity and inventory rather than undertaking individual initiatives for emergency-level decisions. Participants also criticized the condescending behavior of the Red Cross volunteers who arrived later in the region and complained about the withdrawal of the military from the area. The volunteers, who arrived in the area prior to the Red Cross, asserted that the army was more efficient and organized during such emergencies because the extensive damage necessitated substantial logistical support.

“Enabling the army. So, they have both in terms of (...) mechanics (...) sheltering, placing tents, (...) but also the medical side of things, they can take care of all of it. And with that, in acute help, they should leave that to the army. That should just be the military domain. Army should be the boss there, because they can also make sure there is no stealing. Those can also make sure there is no crime” (General practitioner, P10).

“What could definitely be better (...) is natural coordination, (...) the army was then also at some point (...) with a field kitchen, but that was all they were allowed to do (...). So, the command had said of the Field Kitchen establishment in Chaudfontaine people can come and get food there or eat there on the spot. (...) If you as a human being have to travel 10 kilometers to eat in Chaudfontaine. When you do not have a car (...) anymore, that’s very difficult. That is also not public transport at that time. But well that falls under the command of the army of course (...).What we saw, certainly In the beginning, just like our group, there were a lot of volunteer groups working who had a very close contact with the people and I think that is the most important thing in such a situation that you immediately have a good contact on the ground locally. We eventually started our group with 4 5 streets to deal with huh with 4 5 streets to contact and because of that our group was created actually so that contact with the residents is very important” (Volunteer, P14).

A different volunteer (P14) remarked that conflicts among various stakeholders hindered assistance to flood-affected residents in the region. Due to ambiguous coordination and task allocation among these stakeholders, the needs of citizens were shifted to a more distant location, with the Red Cross assuming control of field kitchens previously established by the military, which proved counterproductive for the affected populace. The Red Cross must develop more pragmatic solutions for the needs of affected individuals, achievable only through collaboration with various stakeholders; for instance, volunteers can engage with the local populace to evaluate the situation, while the military can tackle urgent concerns.

Another critique was articulated by a volunteer general practitioner, who asserted that the Red Cross is inadequately managing the situation and that the municipality has not sufficiently addressed the aftermath of the disaster in the hamlets. This resulted in conflict at the management level between the Red Cross and various stakeholders, including the army and volunteers, as the Red Cross were reluctant to collaborate and their regulations were incompatible with the circumstances, as *“the only one who has enough structure for such things is the army” (P10).*

The volunteer (P10) further expressed that conditions in the hamlets were poor, as those affected were grappling with physical burdens, and providing tangible assistance was deemed more critical than offering psychosocial support, such as establishing heating facilities, clearing electrical cables, or maintaining electricity supply. Because the helpers concentrated on providing basic first aid, they did not consider offering assistance or counselling. In small areas, such as hamlets, individuals encounter greater difficulty in obtaining assistance in events of disaster. Residents in hamlets receive not only psychosocial assistance but also first aid, including mud removal and provision of shelter.

“We had so much work with the basic needs, just making sure that there were plastics hung so that it was not too cold in those houses, (...) making sure that via, because the electrogenic groups also belonged to the army,

that we could supply a bit of electricity to those people via long, (...) extension cables, because if you want to let that dry, you also have to have blowing installations (...). Unfortunately, we did not have time for [mental help] all that. Elementary food, elementary hygiene, (...) collecting shampoos, soaps, towels, I do not know what, just some clothes” (General practitioner, P10).

The psychosocial manager (P2), who played an active role during the flood response, emphasized the significance of addressing the needs of affected citizens in times of disaster. This psychosocial first aid may not exclusively come from formal responders; it can also involve local individuals and trained volunteers. The paramount concern is to ensure that affected individuals are not neglected. All individuals are informed about the locations of food distribution and medical services.

“It is about the principle of psychosocial first aid. You do not have to be a psychologist to properly support people in a situation where they are evacuated (...) that means we are going to make sure your basic needs are met. Because that is already a very big part of your burden. We are going to guide you through the process if you still have administrative questions. So, it starts with a lot of these questions. Then a lot of the burden already disappears. (...) Psychosocial first aid is mainly focused on providing safety (...) creating hope of we are going to help look for you what are the options.”

4. Discussion

This qualitative study based on 22 semi-structured interviews conducted in 2022 and 2023 with 2 citizens, 20 volunteers, healthcare professionals, and humanitarian workers involved in the 2021 floods in Belgium’s Vesder Valley, offers a first in-depth qualitative analysis of the psychosocial dimensions of this disaster’s impact and recovery phase in the Belgian region from citizens’ and first responders’ perspective. It identifies three core themes: first, the floods’ immediate and enduring psychosocial effects on citizens, including emotional trauma, PTSD, and work-related stress among frontline responders; second, the role of mediating factors—such as socioeconomic status, insurance access, the COVID-19 pandemic, and substance use—in shaping recovery trajectories, with lower SES linked to prolonged distress; and third, structural and organizational deficiencies in the disaster response, including delayed aid, weak coordination, and inadequate risk communication. The findings also shed further light on the value of community solidarity while exposing systemic inequities and preparedness failures. Most of the acquired insights on citizens’ psychosocial health are through the lens of the first responder.

4.1 Interpretation of Findings

Firstly, our findings show that flood displacement (temporary or permanent) is linked with fear, loss, trauma, distress, and difficulty of returning to normalcy among affected citizens, provided by first responders’ perspective. This aligns with evidence related to the same event. For example, De Maeyer et al. (2025) found that over 50% of surveyed residents in 2021 flood-affected Belgian municipalities reported deteriorated psychosocial well-being two years post-event, with financial hardship emerging as the principal risk factor. Zenker et al (2024) also conducted a household survey in Germany’s affected Ahr Valley one-year post-event and found that 28.2% of respondents exhibited indicators of PTSD—significantly associated with injury, illness during the flood, and perceived social isolation. Nearly 70% suffered from sleep disturbances and reduced enjoyment in daily activities, reflecting psychosocial disruption. An important point is that the assessment reported emotional burden, burnout, and stress in healthcare workers, volunteers, and other disaster responders. Additionally, the study showed that the organization of the response had a high toll on the first responders involved.

Another key outcome is that the flood exacerbated pre-existing vulnerabilities in some affected citizens who were already struggling with financial instability, health problems, or substance use. They faced intensified hardship in the disaster recovery phase, including delays in access to basic services, unresolved insurance claims, and insufficient support mechanisms, which prolonged their displacement and anxiety. Participants voiced concerns about the long-lasting uncertainty and helplessness generated by this, which may indicate that psychosocial well-being cannot be separated from material and financial stability (Korman et al., 2019). This hypothesis is consistent with Rufat et al. (2015), who reviewed drivers of social vulnerability in 67 case studies of flood disasters, showing that, albeit context-specific, socially vulnerable groups in flood zones often encounter significant barriers to recovery assistance, including delays in insurance payouts and limited access to housing support,

depending on their demographic characteristics, socioeconomic status, and health. The situation is consistent with the concept of a social gradient in disaster recovery (Kammerbauer & Wamsler, 2017).

Second, the flood response effort, especially governmental and formal aid, was broadly criticized by interviewees for its lack of coordination, communication gaps, and late mobilization. Participants described confusion regarding responsibilities between municipal, regional, and federal actors, which led to basic needs not being met and contributed to a widespread sense of abandonment and mistrust, particularly in socially vulnerable neighborhoods (Blaikie et al., 2014).

Third, despite these systemic shortcomings, community solidarity played a crucial protective role. Spontaneous neighborhood networks, family support, and local volunteerism provided essential practical and emotional assistance. As observed in other disaster settings, such informal coping mechanisms foster a sense of collective resilience, temporarily compensating for institutional failures (WHO, 2019). However, this reliance on community support was unevenly distributed: areas with stronger pre-existing social ties fared better, while isolated or economically disadvantaged communities struggled (Messenger et al., 2021).

Fourth, frontline responders and health workers experienced significant secondary psychosocial impacts. Some reported exhaustion, emotional distress, and blurred boundaries between professional duties and personal vulnerability consistent with the literature on responder trauma (Surya et al., 2017; Manfrini et al., 2023). The lack of adequate psychological support and preparation for these groups reflects an overlooked gap in current disaster management practices, underscoring the need for structured mental health resources targeting responders themselves.

Fifth, participants noted the overlap between the flood disaster and the COVID-19 pandemic, which likely compounded psychosocial distress by disrupting social services and amplifying existing fears, though the direct relationship remains difficult to isolate from the data (Pritchard et al., 2020). This intersection points to the importance of addressing compounding crises in future preparedness plans, as multiple stressors can jointly shape disaster impacts (Edelstein & Vanclay, 2024).

Finally, consistent with the IASC Guidelines (2007), the findings underscore the necessity of integrating psychosocial considerations across all disaster response phases, particularly ensuring early, coordinated delivery of basic services and fostering social connectedness to mitigate distress. As noted by a local psychosocial coordinator (P2), effective support “does not require a psychologist,” but rather trained responders who can address basic needs and guide affected individuals through uncertainty, helping to ease their burden and restore hope. Yet, the delivery of such psychosocial first aid (PFA) varied by context and capacity, exposing gaps in preparedness. The critique of aid delays and insufficient vulnerability assessments reflects these shortcomings and signals the need for multi-level, anticipatory governance approaches (Lietaer et al., 2023).

4.2 Strengths and Limitations

This qualitative study has several strengths. First, by focusing on one of the most severely affected villages, it provides in-depth insights into the immediate and long-term effects on individuals, infrastructure, and community resilience. This localized focus contributed knowledge on vulnerabilities in flood-prone areas, informing future recovery strategies. Second, a participatory research approach was employed to foreground the voices of affected residents. This immersion into the community ensured methodological equity, allowing participants to share their experiences and contribute to recovery discourse. Third, to enhance data reliability, the study adopted a longitudinal design, interviewing people over the course of multiple months, systematically updating demographic information, including participants' ages and interview dates. A multi-tiered verification process was implemented, involving direct confirmation when possible and triangulation through secondary sources when necessary. A “Last Verified Date” field was introduced to increase data transparency and enable future researchers to assess the timeliness and reliability of demographic entries.

Despite these strengths, the study also has limitations. Its focus predominantly on Trooz, one single village, which may limit generalizability to other contexts with differing socioeconomic or environmental conditions, even in the same affected region. Furthermore, while the initial set-up was to interview affected citizens, eventually only two citizens were recruited, while the majority of our sample consisted of involved first responders. This led to the results being mostly framed from a responders' point of view, or the responders' perception of affected citizens, rather than a first-hand view. In addition, participant recollections may have been influenced by emotional distress, a common challenge in post-disaster research. Finally, logistical constraints, such as access to participants and verification hurdles, may have affected data coverage and representativeness.

5. Conclusions

This study revealed the substantial psychosocial impact of the 2021 floods in Belgium, highlighting both immediate and long-term mental health consequences for affected communities. It identifies critical gaps in current recovery frameworks, particularly the lack of sustained psychological support. Addressing these gaps requires the integration of psychosocial care into all phases of disaster management. Strengthening intersectoral collaboration among policymakers, mental health professionals, and local stakeholders is essential to ensure that mental well-being is embedded in disaster preparedness, response, and recovery. This research underscores the importance of holistic and inclusive approaches to flood risk governance, with psychosocial resilience as a central pillar.

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9. Appendix

Appendix 1: Overview of Guide with Main Questions and Prompts

Introduction question: Describe to us how you experienced the 2021 floods and related?

PART 1: Psychosocial health impact

For professionals:

1)
According to you, how did the floods impact psychosocial health of affected people in Vesder valley?

2)
Did you experience any differences in psychosocial health impact compared to other extreme events, and if so, which?
a.

Do you relate any of these psychosocial health impacts to climate change/psychosocial stress in general, and if so, how?

For citizen:

3)
How did you feel during and after (up until today) the 2021 floods?

4)
What were the main (psychosocial) health impacts of the floods for you/your household, and how did this impact you?

5)
To what extent are you / is your household (still) affected today?

PART 2: Psychosocial health response

For professionals:

6)
How was the psychosocial health response organized (in Vesder valley) during the 2021 floods? Prompts: how was it coordinated, who were the collaborators, on which level (local, regional, national level, collaboration with other affected countries)

7)
What was your function in the psychosocial health response?

8)

What were your tasks and responsibilities in the psychosocial health response?

9)

How do you evaluate the psychosocial health response?

a.

What went well?

b.

What went not well?

c.

What could be done better for future climate-related events? Prompts: which responsibilities, which level?

10)

Were, and if so which, the psychosocial health impacts you mentioned in question 1 and 2.a. adequately addressed and supported in the response?

For citizens:

11)

How were you supported during and after the floods for your psychosocial wellbeing? Prompts: by who, for what, ..etc.

12)

Did you feel you were adequately supported? If (not) so, how?

a.

What went well for you?

b.

What went not well for you? Prompts: were there services missing, and if so, which?

c.

What could be done differently in the future?

Cooldown question: is there anything you would like to add?

Appendix 2: Visuals from the Study Site Collected During Explorations



Figures 5: Vesder Valley in Trooz, taken on June 1, 2022, by the authors.



Figures 6: Street in Trooz, taken on June 1, 2022, by the authors.



Figures 7: Street in Trooz, taken on June 1, 2022 by the authors.



Figures 8: The marked paper indicates the maximum water level reached during the 2021 Vesder Valley flood.

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