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Original Research

Perceived consequences of megadrought on wellbeing and the role of health care: narratives from rural communities in Elqui Province, Chile

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Abstract

Introduction: Drought is one of the most widespread natural disasters and a major contributor to climate-related health impacts. This study explores the perceived consequences of megadrought and examines the role of health care in addressing its effects, based on the narratives of residents from two rural communities in Elqui Province, Chile.

Methods: A qualitative, descriptive, and narrative design was applied. Thirteen semi-structured interviews and one focus group (*N*=22) were conducted using snowball sampling. Participants were community members, adults (≥18 years) with at least 8 years of residence in the area, engaged in water-dependent economic activities such as small-scale agriculture, goat herding, or rural tourism. Investigator triangulation ensured methodological rigor. Data were analyzed using thematic narrative analysis.

Results: Two thematic lines were identified: perceived consequences of the megadrought and the role of healthcare in this context. Within the first thematic line, narratives revealed that the megadrought was perceived as a process transforming multiple dimensions of everyday life. Participants described its effects as interconnected experiences in which environmental degradation, economic uncertainty, social tensions, difficulties accessing water, and emotional distress mutually reinforced one another. Regarding participants' perceptions of the role of health care, the commitment of rural health teams was acknowledged; however, participants also expressed the need for health care to respond not only to diseases but also to the changes that the water crisis produces in daily life, social relationships, and community wellbeing.

Conclusion: The megadrought's effects are cumulative and interconnected, spanning environmental, social, and economic

dimensions that influence rural wellbeing. It is suggested that there is a need to advance toward climate-sensitive rural healthcare strategies capable of addressing the social, emotional, and health impacts associated with the water crisis and strengthening the adaptive capacity of communities.

Keywords

Chile, climate change, drought, qualitative research, rural nursing, wellbeing.

Introduction

Climate change is recognized as one of the most complex and persistent challenges for global public health. Rising temperatures have intensified hydrometeorological variability, contributing to the increased frequency of extreme weather events such as droughts, floods, and heatwaves, which directly and indirectly affect population health[1]. These climate-related phenomena may exacerbate morbidity and mortality through multiple pathways, including food and water insecurity, disruption of livelihoods, and deterioration of environmental quality[2].

Compared to sudden disasters such as wildfires, storms, and flash floods, drought develops slowly but constitutes the most geographically widespread natural hazard worldwide[3]. Its cumulative and prolonged effects are often underestimated, despite evidence showing that slow-onset disasters may have severe and long-lasting consequences for human wellbeing. In 2020, it was estimated that 19% of the global land surface was affected by extreme drought, highlighting its increasing global relevance[4].

Chile has not been immune to this growing climate threat. Historically, the country has experienced several major droughts, particularly those in 1968 and 1998, as well as the megadrought that has persisted in central Chile since 2010. This current megadrought presents distinct characteristics compared to previous events, largely due to the emerging signal of anthropogenic climate change[5]. In the Coquimbo Region, and specifically in Elqui Province, the megadrought reflects the combined effects of climate change and unsustainable water use. Both the agricultural and mining sectors exert considerable pressure on limited water resources. Furthermore, water demand for agriculture is projected to increase even further, an unsustainable trend given the region's current hydrological limitations[6].

Drought can affect both physical and mental health, increase exposure to unsafe water, reduce food availability, alter local ecosystems, and intensify socioeconomic inequalities[2,7]. These impacts disproportionately affect populations already in vulnerable situations, such as children, older adults, women, and low-income households[2]. Rural communities are particularly vulnerable due to their high dependence on water-intensive agriculture and rural tourism, limited infrastructure, and reduced access to essential health services[8]. Therefore, understanding how drought influences daily life and community wellbeing is critical for strengthening rural health responses.

In drought contexts, the effective exercise of the right to water may be severely restricted, especially among rural populations and other socially vulnerable groups[9]. Access to water constitutes a fundamental human right, indispensable for life, health, and human dignity. This right includes the availability of sufficient, safe, accessible, and affordable water to meet basic needs for consumption, hygiene, and sanitation[10]. However, its guarantee is increasingly threatened in territories exposed to prolonged droughts. Reduced water availability compromises daily access to water and limits the capacity of individuals and communities to meet essential needs, generating significant challenges for the protection of health and wellbeing[9,11]. In this sense, drought transcends its environmental dimension to become a public health and human rights issue, highlighting the need to understand its impacts from an integrated perspective linking climate change, health equity, and access to water.

In recognition of these growing challenges, the Chilean Ministry of Health (MINSAL) incorporated climate and environmental considerations into the National Strategy for Health Goals 2030[12]. Two strategic axes – Environment and Healthy Environments, and Emergencies and Disasters – promote strengthening community participation, ensuring the availability of safe drinking water and food, and enhancing health system preparedness for climate-related events. Rural health teams, including nurses and primary healthcare professionals, are expected to play a central role in disaster risk reduction, community resilience, environmental health promotion, and local adaptation strategies.

Despite these national priorities, evidence remains limited on how rural communities experience the health consequences of prolonged drought and how they perceive the role of health care in responding to this crisis. Understanding these perspectives is essential for informing context-sensitive and territorially grounded public health interventions. Therefore, this study aims to describe the perceived consequences of drought and examine the role of health care from the perspective of community members in two rural communities of Elqui Province, Chile.

Methods

Study design

A qualitative, descriptive, and narrative study design was employed. The literature highlights the need for participatory and inclusive methodologies to investigate the health impacts of climate change, as these approaches enable the co-construction of narratives that make health inequities visible and support the development of context-specific adaptation strategies with communities. These approaches recognize the value of local knowledge, cultural identity, and traditional practices in the planning and implementation of adaptive actions[13].

Study setting

The study setting corresponded to the rural areas most affected by the megadrought in Elqui Province, Coquimbo Region, Chile. The province consists of six municipalities: La Serena, Coquimbo, Vicuña, La Higuera, Paihuano, and Andacollo. For this study, the municipalities of La Higuera and Paihuano were selected. Their selection was based on the following rationale: climate change and anthropogenic factors are the main drivers of the current drought, and current forecasts suggest limited potential for its reversal[14]. These two municipalities experience significant water stress and have the lowest number of rural drinking water connections in the province, depending on water deliveries by tanker trucks for supply[15]. In addition, socioeconomic indicators for La Higuera and Paihuano are in the lowest quartile of the provincial vulnerability and living conditions index, which includes indicators such as education, income, occupation, and housing[16].

In the municipalities of La Higuera and Paihuano, primary health care is provided through rural health posts staffed permanently by a resident paramedic technician, who is responsible for delivering basic health care, carrying out health promotion and prevention activities, and coordinating referrals to other levels of care when necessary. Due to geographical isolation, communication with the corresponding referral centers is maintained through a radio network. Professional care is delivered through periodic outreach rounds conducted by multidisciplinary primary healthcare teams, consisting of a GP, nurse, midwife, and nutritionist. These scheduled visits allow the delivery of clinical care, health check-ups, and home visits, contributing to ensuring access to healthcare services in remote rural communities.

Participants

Participants were members of the communities of La Higuera and Paihuano. Inclusion criteria were as follows: adults aged 18 years or more; at least 8 years of residence in rural areas of the selected municipalities; and engagement in water-dependent occupations such as small-scale farming or horticulture, goat herding, or rural tourism. Exclusion criteria were as follows: complex health problems that could hinder qualitative participation; and the intention to permanently migrate from the community. Sample size was determined by data saturation[14], which was reached with 14 participants in La Higuera and 8 in Paihuano (N=22).

Sampling

Snowball sampling was used, following standard qualitative research procedures[17]. The recruitment process was carried out in two stages. In the first stage, the principal investigator conducted in-person visits to the study territories and established contact with the municipalities of both communities. In each municipality, meetings were held with the officer responsible for coordinating neighborhood associations and community organizations to present the objectives and scope of the research and to request support in contacting community leaders. When leaders expressed interest in learning about the study, the municipal coordinator facilitated access to their contact information. In the second stage, the researcher contacted leaders of neighborhood associations, goat herders' organizations, and *Agua Potable Rural* (Rural Drinking Water; APR) committees by telephone to explain the study objectives and coordinate informational meetings with members of their respective organizations. Once these meetings were held, individuals interested in participating were identified and screened for eligibility according to the inclusion criteria. Participants who met these criteria were invited to take part in either an individual interview or a focus group, according to their preferences and availability. Subsequently, their contact details were recorded to coordinate the date, time, and place of the corresponding activity.

After each individual interview or focus group, participants were asked to recommend other community members who might be interested in participating and who met the inclusion criteria. Potential participants identified through this process were contacted by the researcher, who provided information about the study and invited them to participate. This process was carried out iteratively until data saturation was reached, evidenced by the recurrence of emerging themes and the depth of the narratives. It is important to note that the researchers had no prior personal or professional relationship with either the key stakeholders or the participants.

Data collection

Two qualitative data collection techniques were used: semi-structured interviews[18] and focus groups[19]. Participants were able to choose their preferred mode of participation according to their availability and personal circumstances. Although both options were offered, most participants opted for individual interviews due to travel difficulties associated with the geographical dispersion of rural communities and the long distances between localities. These conditions limited attendance at the designated meeting place for focus groups; therefore, only one focus group could be conducted. Consequently, individual interviews constituted the primary data collection strategy.

Fieldwork was conducted between January 2023 and January 2024. A total of 13 semi-structured interviews were carried out in participants' homes or in places of personal or cultural significance, such as during walks around the territory, in goat pens, family gardens, or places described by participants as 'where the river used to flow but no longer does'. The focus group was held in the hall of a neighborhood association and included nine participants from La Higuera municipality. Both the individual interviews and the focus group lasted between 60 and 90 minutes. The topics explored during the interviews and focus group were organized around guiding themes related to experiences and perceptions of drought, its effects on health, wellbeing, and everyday life in rural communities, the actions undertaken by local health teams in response to this phenomenon, and participants' expectations regarding the role these teams should play during drought-related crisis periods. Following an inductive approach, no predetermined set of questions was used. Instead, questions emerged dynamically throughout the interaction with participants, according to the narratives, experiences, and meanings that arose during the dialogue. The individual interviews and focus group were conducted by the principal investigator, who had no previous relationship with the participants. At the beginning of each encounter, the study objectives were explained and informed consent was obtained. All sessions were audio-recorded and transcribed verbatim for analysis. Once the transcripts had been reviewed and verified, the audio files were deleted.

Data analysis

A thematic narrative analysis was conducted, with emphasis on the content of participants' accounts and their connections to the rhetorical and cultural resources embedded within them[20]. The analysis followed four stages: conducting the interviews and preparing complete verbatim transcripts; repeated reading of the transcripts to achieve familiarity with participants' narratives, plots, and motivations; coding each interview and classifying meaning units while preserving the integrity of individual narratives; and identifying similarities, tensions, and transformations across the corpus to construct cross-cutting themes.

The analyses of the individual interviews and the focus group were initially conducted separately. Two researchers independently analyzed the transcripts and subsequently discussed the findings until consensus was reached regarding data interpretation and thematic construction. To strengthen analytical rigor, an external researcher with expertise in qualitative research reviewed the analytical process and the emerging thematic structure, contributing to investigator triangulation. Finally, source triangulation was performed by comparing findings obtained from the individual interviews and the focus group, identifying convergences and divergences between both datasets and strengthening the consistency of the findings[17].

Ethics approval

All participants provided written informed consent. The study was approved by the Scientific Ethics Committee of the University of La Serena (CEC-ULS), Chile (Resolution No. 10/2022, CEC-ULS). The CEC-ULS is accredited by the Chilean Ministry of Health through Resolution No. 2304292152, dated 13 December 2023. In Chile, accreditation of a Scientific Ethics Committee constitutes a formal mechanism for ensuring the ethical quality of research. Its main contribution is to provide legitimacy, institutional recognition, and effective protection for participants, while simultaneously strengthening scientific validity.

Results

A total of 22 individuals participated in this study, including 13 women and 9 men. Participants' ages ranged from 23 to 68 years. Regarding occupational activities, six participants were engaged in goat herding, seven in small-scale farming or horticulture, and nine in rural tourism. All participants reported belonging to a community organization. Notably, 12 participants held positions as community leaders or representatives. Participants' accounts revealed that drought and water scarcity for human consumption were mainly attributed to climate change and the overuse of water resources at the community level by mining companies and agro-industrial activities.

Two main thematic lines emerged from the analysis: perceived consequences of the megadrought, and the role of health care in the context of megadrought.

Perceived consequences of drought

Within this thematic line, four interrelated categories were identified: mental health, hygiene and food and water security, socioeconomic impacts, and climatic and landscape change (Table 1).

Mental health

All participants reported perceiving the impact of drought on their mental health. Older participants expressed profound nostalgia for relational and social practices that once revolved around water, such as gatherings by the rivers, articulating narratives of solastalgia, understood as a deep longing for degraded or lost environments to which they felt emotionally attached (Table 1, quote **a**). In contrast, younger participants expressed uncertainty regarding the loss of employment and economic opportunities resulting from water scarcity (Table 1, quote **b**). Their accounts also revealed experiences of eco-anxiety, characterized by distress and apprehension about the irreversible impacts of climate change and concerns about the future (Table 1, quote **c**).

Hygiene, and food and water security

Participants described how the megadrought significantly affected water availability for domestic consumption and food production, with direct repercussions for household food and water security. Many reported that they had previously maintained family gardens for self-consumption, which helped supplement their diets and reduce household expenses. However, the sustained lack of water led to a progressive decline in food production and, in many cases, the abandonment of these spaces, despite efforts to reuse water to maintain some crops (Table 1, quote **d**).

Narratives revealed concerns regarding the quality of water intended for human consumption. Those who depended on APR systems or water supplied by tanker trucks expressed distrust regarding water sourced from wells and aquifers, associating it with contamination. As a result, many families chose to purchase bottled water for drinking and food preparation, generating an additional economic burden (Table 1, quote **e**). Likewise, water scarcity and poor water quality also affected personal and domestic hygiene practices. This situation was mainly described by women, who perceived frequent interruptions in water supply as a threat to hygiene, family wellbeing, and quality of life (Table 1, quote **f**).

Socioeconomic impacts

Participants described how the megadrought generated significant social and economic repercussions in their communities. At the community level, tensions emerged around water access and distribution, characterized by conflicts between neighbors and perceptions of inequity in water availability (Table 1, quote **g**). However, these dynamics coexisted with expressions of organization and community support aimed at coping with water scarcity. The narratives reflected a constant tension between cooperation and conflict, where the water crisis appeared to weaken some social bonds while strengthening others through collective actions to ensure access to the resource. This coexistence of solidarity and conflict was described by participants as a recurring feature of community life during the megadrought. Despite these collective efforts to cope with the water crisis, feelings of abandonment and insufficient support from authorities persisted (Table 1, quote **h**).

At the household level, the megadrought significantly affected livelihoods and household economic stability. Participants reported increased expenditures on purchasing water for human and animal consumption, along with crop losses and goat mortality associated with water and forage shortages (Table 1, quote **i** and quote **j**). As an adaptation strategy, many families diversified their sources of income or abandoned traditional agricultural activities to sustain their livelihoods (Table 1, quote **k**). Younger participants also highlighted the loss of green areas and recreational spaces, which they perceived as negatively affecting wellbeing and community quality of life (Table 1, quote **l**).

Climatic and landscape change

The narratives reflected a widespread perception of profound environmental changes associated with the progression of the megadrought and climate change. Participants described a sustained increase in temperatures and a growing sensation of extreme heat, perceived as increasingly frequent and intense phenomena, with consequences for health and everyday wellbeing (Table 1, quote **m**). Likewise, they reported an increase in suspended dust, particularly during periods of greater dryness, which they associated with respiratory difficulties and a deterioration in environmental quality within their communities (Table 1, quote **n**). Beyond these physical changes, participants expressed concern about transformations observed in the landscape and local ecosystems. Narratives described the progressive disappearance of natural water sources, the reduction of vegetation cover, and the loss of plant and animal species that had historically characterized the territory. These changes were interpreted as tangible evidence of environmental degradation and advancing desertification processes (Table 1, quote **o**). In this context, participants perceived that these transformations not only affect natural ecosystems but also influence people's wellbeing and their relationship with the territory, generating feelings of loss in relation to a landscape they considered increasingly degraded and different from the one they had known in the past.

Within this thematic line, narratives revealed that the megadrought was perceived as a process transforming multiple dimensions of daily life. Participants did not describe its effects as isolated

problems, but rather as interconnected experiences in which environmental degradation, economic uncertainty, social tensions, difficulties in accessing water, and emotional distress mutually reinforced one another. In this context, wellbeing was understood as an experience linked not only to material living conditions but also to social relationships, livelihoods, and connection to the territory. These experiences suggest that the impacts of the megadrought are simultaneously expressed at the individual, family, community, and environmental levels.

Table 1: Representative quotes for the thematic line 'perceived consequences of the megadrought' by category

Category	Quotes
Mental health	**a**. 'Fifteen years ago, there was a small lagoon nearby. We used to go through the ravine and upstream pools where people would bathe; on Saturdays and Sundays, families, friends, and neighbors gathered there to socialize. But now there is nothing, everything is dry. It causes sorrow, sadness, to see something we grew up with and can no longer enjoy.' (Goat herder, La Higuera, 64 years)
	b. 'Every year production decreases more and more; now it's too much, too much. The trees are drying up, and the lack of water affects everything, trees and crops. That generates worry; I think people get sick from that. Many people live off their crops, and if they have no water, they worry and get sick.' (Rural tourism worker, Paihuano, 53 years)
	c. 'The drought is severe. I think if it doesn't rain in a couple of years, there will be no water, not even in the aquifers. They say that in Chile the wells are dropping more and more, going deeper into the Andes to capture water. And that's nothing compared to what's happening in this town. You watch documentaries, and you realize that in the future we'll be working for water, not for money. That's how bad the drought will get, we're going from bad to worse.' (Rural artisan, La Higuera, 42 years)
Hygiene, and food and water security	**d**. 'We used to plant everything. I had potatoes and even huge pumpkins. I managed to save some crops by recycling water, but now I only have cherry tomatoes left. The avocado trees died, I think due to the lack of water, and our blueberry bushes stopped producing. We used to feed ourselves from that, not anymore.' (Rural artisan, La Higuera, 56 years)
	e. 'The water from the APR is fine for bathing, cleaning, or laundry, but not for drinking. As community leaders, we managed to get cheaper water jugs for people to drink and cook with, because the aquifers are lower and the wells are deeper, and that water is contaminated mainly with arsenic. It tastes bad and looks gray; you can tell it's polluted.' (Goat herder, La Higuera, 68 years)
	f. 'If you want to eat some fruit or make juice, you need clean, healthy water to wash it. But you open the tap, and gray, dirty water comes out. The water supply is frequently cut off, especially in summer, so you must carry water for the toilet and bathe with buckets. How do you clean the kitchen or bathroom like that? It's stressful and unhygienic.' (Small-scale farmer, La Higuera, 38 years)
Socioeconomic impacts	**g**. 'There is hope but also fights here over water. Even though there are restrictions and turns to draw water from the canal, it's like a 'Small town, big hell', people accuse others of stealing water. Some have more water rights, so they have more opportunities to move forward. Almost every weekend there are problems with the rural water supply, everyone complains in the WhatsApp group, and it's worse in summer because the water gets cut off.' (Small-scale gardener, Paihuano, 36 years)
	h. 'Our towns are the country's backyard never mentioned. There's neglect in every sense. We need people to see this problem beyond politics because it's a necessity. Politics won't bring us water; we need action, not words, because no one lives on words. It's been over three days without water, and nobody cares.' (Rural artisan, La Higuera, 52 years)
	i. 'Here, water trucks from the municipality come maybe once a month, sometimes every 15 days. We just make do with what we get for the household. For drinking, I buy bottled water. I have 80 goats that drink 300 liters a day, and that's not enough, so I must buy water. In summer, it's even more expensive.' (Goat herder, Paihuano, 64 years)
	j. 'Now only three people are still making cheese. For example, my sister-in-law makes cheese, but there's no grazing for the goats, so they have to feed them bran and hay, which are very expensive. She separates the goats that are going to give birth to feed them and save them, and the others stay behind and die. She has to save the ones that will give milk because that's her livelihood.' (Rural artisan, La Higuera, 56 years)
	k. 'In a family, someone must have a stable job. In our case, we let the vineyards dry because there isn't enough water. I try to work in other things, find a business or any job to earn some money it's an alternative. If the vineyard doesn't provide enough to eat, we must look elsewhere. My son went to work in the mining sector.' (Small-scale farmer, Paihuano, 62 years)
	l. 'We're all having a hard time with the water shortage. This town is dry in every sense. You can see there are no green areas because we can't maintain them – no plazas, no parks, nowhere to relax.' (Rural tourism worker, La Higuera, 23 years)
Climatic and landscape change	**m**. 'I think we're going to boil[†] this summer because it's so dry, and with the sun coming, everyone has noticed the climate change this year. I think this summer will be extremely hot, and with the drought here, it'll be even worse.' (Small-scale farmer, Paihuano, 36 years)
	n. 'In dry years like we've experienced, dust suffocates you and irritates your throat. The air we breathe probably carries viruses or metal dust that harm our bodies. You don't notice right away, but over time it makes you sick. We can't breathe properly, people get asthma. We should breathe clean air; when it rains, there's no dust, and the landscape changes.' (Rural tourism worker, Paihuano, 67 years)
	o. 'There used to be pools, like small lagoons, further up, but they're disappearing because of climate change. With the lack of water, they say the desert is advancing, you can see it in the flora. Before, you'd see añañucas[¶], grass, trees, flowers every spring, but now nothing. The 'flowering desert'[§] is gone. With global warming, it's a disaster.' (Rural artisan, La Higuera, 42 years)

[†] 'We're going to boil' is a common colloquial Chilean expressiondescribing the sensation of intense heat.
[¶] Añañuca is a typical flower native to northern Chile, found between Copiapó and the Quilimarí valley in the Coquimbo Region.
[§] Flowering desert is a natural phenomenon in northern Chile, when unusual rainfall triggers the mass germination of dormant seeds, temporarily covering the desert with a wide diversity of flowers and vegetation.
APR, *Agua Potable Rural* (Rural Drinking Water).

The role of health care in the context of megadrought

Within this thematic line, two categories were identified: assessment of current health care and expectations regarding health strategies (Table 2).

Assessment of current health care

Participants expressed a positive assessment of rural health teams and acknowledged their commitment to the communities. However, the narratives revealed that participants primarily associated health care with the control and monitoring of people living with chronic diseases, such as hypertension and diabetes (Table 2, quote **a** and quote **b**). This perception suggests that a large proportion of participants understood health care from a predominantly care-oriented and clinically focused perspective, with less recognition of other actions related to health promotion, disease prevention, and community-based work. Likewise, participants pointed out limitations related to the availability of healthcare professionals, particularly physicians, as well as difficulties in carrying out regular outreach rounds due to transportation problems and logistical constraints.

Expectations regarding health strategies

Participants expressed expectations for health care that, in the context of megadrought, would extend beyond clinical care and incorporate preventive, community-based, and locally adapted strategies. In this regard, participants emphasized the need to strengthen connections between health teams and communities to identify problems related to water scarcity and water quality, as well as to develop health promotion and disease prevention actions addressing these issues (Table 2, quote **c**). Community members also emphasized the importance of health professionals having a deeper understanding of the living conditions of rural families affected by water scarcity. For this reason, they valued home visits and a stronger presence of health teams in the territory, considering these strategies essential for promoting health care that is more responsive to local needs (Table 2, quote **d**). The narratives also highlighted the need to incorporate local knowledge and practices into health strategies. Older participants emphasized the value of recovering knowledge related to sustainable water use, family gardens, medicinal plants, and other historical practices of adaptation to adverse environmental conditions (Table 2, quote **e**). Across narratives, participants highlighted the importance of strengthening health education actions and community psychosocial support. They proposed the development of group spaces oriented toward self-care, hygiene, water security, and adaptation to drought, together with initiatives aimed at addressing mental health problems associated with the prolonged water crisis (Table 2, quote **f** and quote **g**).

Within this second thematic line, participants acknowledged the commitment of rural health teams but also expressed the need to strengthen strategies that integrate health care with the environmental, social, and emotional conditions shaping the experience of living in a context of megadrought. The narratives suggest that communities expect health care capable of responding not only to diseases but also to the changes that the water crisis produces in daily life, social relationships, and community wellbeing. In this sense, participants attributed particular importance to territorial proximity strategies, community participation, and the recognition of local knowledge as fundamental elements for addressing the challenges associated with drought.

Table 2: Representative quotes for the thematic line 'the role of health care in the context of megadrought' by category

Category	Quotes
Assessment of current health care	**a**. 'What I have seen is that when they go to the health post, it is to treat varicose veins, chronic patients, check on diabetics, that kind of thing.' (Rural tourism, Paihuano, 53 years)
	b. 'They just go to see the sick people, that's it. Near where I live, they come to see *Nano.*[†] When they come to see him, a young woman from the healthcare team gets off the ambulance with a briefcase.' (Goat herder, La Higuera, 65 years)
Expectations regarding health strategies	**c.** 'If the health center worked more closely with the people, more things could be prevented, because maybe the water is making us sick, that's why we have stomach pain. They should unite with the community and do what people here need, a preventive campaign, tests, check-ups, because they've said the water is contaminated with minerals, arsenic, and is dirty.' (Focus group participant, La Higuera)
	d. 'The professionals who come to the health post should have more presence in the village, go door-to-door, and see the conditions people are living in, how they live without water because it's not hygienic at all. Without water, there is no hygiene.' (Rural tourism worker, La Higuera, 23 years)
	e. 'Professionals should learn to love the place we have, rescue local knowledge, and remind people of it, because the knowledge of the elders is being lost. They should involve the topic of medicinal plants, gardens, how we have survived with so little water for so long it's all part of our traditions.' (Focus group participant, La Higuera)
	f. 'It would be ideal for professionals to organize group spaces that bring people together and allow us to learn things that benefit us educating people, events for stretching, gardening, water recycling things that nourish the soul.' (Small-scale farmer, Paihuano, 36 years)
	g. 'We depend a lot on the land, so the lack of water really affects our health. It's not only physical, it's emotional too. I don't know if the health post has any program dedicated to addressing emotional issues related to water and drought. They should have some activity that helps us with this emotional aspect.' (Rural tourism worker, Paihuano, 38 years)

[†] Nano is a nickname used in Chile for people named Hernán.

Discussion

The interviews allowed the identification of two interrelated thematic lines that contribute to understanding how rural communities perceive the consequences of megadrought and the role of health care in responding to this phenomenon. The findings show that the perceived effects of drought extend beyond water scarcity and simultaneously affect mental health, food and water security, livelihoods, social relationships, the natural environment, and expectations regarding health care. In this regard, the results suggest that megadrought is experienced as a process that reorganizes the conditions of everyday life and wellbeing in rural communities.

The narratives reveal that the consequences of megadrought are experienced in an interconnected manner. Environmental degradation, economic difficulties, water insecurity, emotional distress, and transformations in community life mutually reinforce one another, shaping a complex experience that simultaneously affects individuals, families, and communities. From this perspective, wellbeing emerges as a multidimensional and relational experience, constructed through the interaction between environmental conditions, livelihoods, social relationships, and connection to the territory.

The mental health problems perceived in this study are consistent with the literature describing a relationship between extreme climate events and experiences of eco-anxiety, solastalgia, distress, uncertainty, and depression[21,22]. However, the findings show that these experiences cannot be understood solely as individual responses to drought. The accounts of older participants show that the loss of rivers, vegetation, and spaces for community gathering also represents the loss of ways of life linked to the territory. In this context, solastalgia is not exclusively related to the physical transformation of the landscape, but also to the alteration of social bonds, shared memories, and senses of belonging historically built around water. Meanwhile, younger participants expressed concern about the loss of employment opportunities and uncertainty regarding the future, reflecting experiences of eco-anxiety previously described in the literature[23]. Likewise, prolonged droughts have been associated with the deterioration of economic and labor conditions, generating distress, demoralization, fatalism, and depression[24], in addition to increasing occupational psychosocial stress among farmers[25]. The findings suggest that these processes do not occur in isolation, but are closely linked to the loss of livelihoods, landscape transformation, and uncertainty regarding the continuity of rural life. In this sense, the emotional

effects of megadrought reflect the interaction between environmental, economic, and social factors affecting community wellbeing.

Regarding hygiene, and food and water security, the results show that decreased water availability simultaneously affects food production, domestic practices, and perceptions of safety regarding water consumption. These findings are consistent with those of Salvador et al[2], who point out that drought has harmful effects on agricultural production and food security. However, the narratives suggest that water insecurity extends beyond resource availability alone. Concerns about water quality, the need to purchase bottled water, and difficulties in maintaining adequate hygiene conditions reveal how water scarcity reshapes daily practices that are fundamental to family wellbeing. Particularly relevant was the concern expressed by women regarding difficulties in sustaining personal and domestic hygiene practices. This finding is consistent with that of Xu et al[26], who identified a close relationship between water scarcity, environmental sanitation, and hygiene in rural communities affected by drought. In this sense, the results show how the experience of megadrought is unevenly distributed among community members, particularly affecting those who assume responsibilities related to the daily care of the home and family. Considering previous evidence in the Coquimbo region in Chile regarding acute diarrheal diseases[27], arboviruses associated with water storage[28], and chronic arsenic exposure[29], the findings reinforce the importance of access to safe water as a central element for health and community wellbeing. The experiences described by participants show how megadrought may compromise the effective exercise of the human right to water and sanitation, recognized by the UN as indispensable for a dignified life and for the enjoyment of the highest attainable standard of health[10]. In this context, difficulties in accessing sufficient, safe, and good-quality water extend beyond an environmental issue and become a matter of health equity. This is particularly relevant for rural communities exposed to prolonged droughts, where limitations in water access may intensify pre-existing health vulnerabilities and deepen social and territorial inequalities in the context of climate change.

The socioeconomic consequences described by participants reflect that megadrought simultaneously affects livelihoods, household economic stability, and community relationships. Conflicts associated with water distribution are consistent with the findings of Döring and Hall[30], who suggest that prolonged exposure to drought may foster tensions and disputes over scarce resources. Similarly, research conducted in rural Chilean communities has shown that conflicts over water access may weaken the social fabric and limit local development processes[31]. However, the findings show that the community experience of drought cannot be understood solely through the lens of conflict. The narratives reveal the coexistence of tensions and forms of cooperation aimed at collectively addressing water scarcity. This coexistence constitutes a relevant finding because it shows that drought reconfigures social relationships in diverse and, at times, contradictory ways. While some bonds weaken due to disputes over limited resources, others are strengthened through organization and mutual support strategies. Likewise, the feelings of abandonment by authorities described by participants, and documented in other rural communities affected by drought in Chile[22], suggest transformations in the relationship between communities and institutions. Taken together, conflicts over water, collective actions, and perceptions of insufficient institutional support reflect changes in trust, reciprocity, and community life. From this perspective, megadrought not only affects resource availability but also restructures social relationships and the connections between communities and institutional systems responsible for territorial management.

Economic losses associated with water purchases, decreased agricultural productivity, goat mortality, and occupational changes are consistent with findings reported in Limarí Province, Chile[32], and rural communities in Brazil[33]. The findings of this study deepen this understanding by showing that economic impacts not only constitute material losses, but also affect life projects, traditional forms of subsistence, and expectations regarding permanence in the territory.

The loss of green spaces, increased temperatures, higher levels of suspended dust, and reduced biodiversity were perceived by participants as transformations closely linked to their everyday wellbeing. These findings are consistent with studies conducted in different international contexts[26,32,34-36]. However, the accounts suggest that landscape transformation implies more than a physical change in the environment. The disappearance of water sources, vegetation, and spaces traditionally used for productive, recreational, and social activities affects daily practices, shared memories, and forms of belonging to the territory. In this way, environmental degradation is also experienced as a transformation of social life and place-based identity.

Within this first thematic line, regarding the perceived consequences of megadrought, the findings acquire particular relevance within the framework of the Sustainable Development Goals (SDGs), especially those related to health and wellbeing (SDG 3), clean water and sanitation (SDG 6), reduced inequalities (SDG 10), sustainable communities (SDG 11), and climate action (SDG 13)[37]. The evidence obtained shows that megadrought simultaneously compromises these goals by affecting essential dimensions of wellbeing in rural communities. From this perspective, ensuring safe, sufficient, and equitable access to water constitutes not only a climate adaptation measure but also an indispensable condition for the exercise of the human right to water. Consequently, responses to megadrought require intersectoral approaches that integrate health, environment, social development, and water management, recognizing the strategic role of rural communities and health teams in building more resilient territories in the face of climate change.

The second thematic line provides relevant elements for understanding how communities perceive the role of health care in relation to the challenges derived from megadrought. Although participants positively valued the commitment of rural health teams, their accounts suggest that health care continues to be perceived mainly from a biomedical perspective focused on the management of chronic diseases. This finding is consistent with the challenges identified by the Chilean Ministry of Health in advancing the effective implementation of the Comprehensive Family and Community Health Care Model in rural settings[38].

The expectations expressed by participants clearly extend beyond the care-oriented sphere. Communities expect health teams to play a more active role in identifying risks associated with water scarcity, promoting health, strengthening community capacities, and supporting local adaptation processes. In this regard, community-based work, knowledge of local realities, and the recovery of traditional knowledge reflect the need to advance toward territorial approaches that recognize communities as fundamental actors in constructing responses to the water crisis. These needs expressed by participants are consistent with experiences reported in Ethiopia[39], where health professionals played important roles in community mobilization and

intersectoral coordination to strengthen local adaptation strategies in response to drought. The results suggest that working with communities implies expanding the traditional scope of health care by incorporating participatory processes, strengthening local capacities, fostering intersectoral articulation, and recognizing community knowledge as relevant resources for adaptation.

This perspective implies understanding health not merely as the absence of disease, but as a condition closely linked to the environmental, social, and economic circumstances shaping the daily lives of rural communities. The expectation of strengthening health education actions and psychosocial support highlights the need to broaden the scope of health interventions. Beyond individual disease care, communities demand spaces aimed at strengthening mental health, self-care, water security, and drought adaptation. This need is particularly relevant considering that the psychological effects of drought are often insufficiently addressed within adaptation policies[24]. Consequently, health strategies should incorporate interventions aimed at strengthening support networks, social cohesion, and community capacities to cope with prolonged adversity.

A particularly relevant aspect of this study is that the experiences of rural communities allow for a deeper understanding of how the effects of climate change are interpreted and lived in specific territorial contexts. The findings allow megadrought to be understood not only as an environmental phenomenon, but also as a process that transforms the material, social, and symbolic conditions that sustain everyday life and wellbeing in rural territories. In this sense, the results highlight the importance of developing research that deepens participatory methodologies capable of systematically integrating community knowledge into planning, adaptation, and territorial governance processes.

Limitations

This study presents some limitations that should be considered when interpreting the findings. First, the findings reflect the experiences and perceptions of participants belonging to rural communities in the municipalities of La Higuera and Paihuano and, therefore, are not intended to be generalized to other contexts. It is important to note that the findings represent participants' perceptions and feelings from a subjective perspective – that is, from their own constructions, values, and criteria for describing and interpreting the perceived consequences of megadrought and their expectations regarding health care in this context. Another important limitation of the study is that all participants were actively involved in some form of community organization, where they carried out various functions and organizational activities. In addition, 12 participants held leadership or representative roles within their communities. Therefore, the findings mainly reflect the perspectives of individuals involved in decision-making and in the implementation of collective actions within their communities.

Conclusion

This study demonstrates that megadrought is experienced by rural communities in La Higuera and Paihuano as a process that profoundly transforms living conditions and wellbeing. The findings reveal that its effects extend beyond water scarcity, shaping a complex experience in which environmental degradation, food and water insecurity, economic hardship, emotional distress, and transformations in community life are closely interconnected. The narratives suggest that wellbeing in rural contexts affected by megadrought is a multidimensional and relational experience, constructed through the interaction between health, livelihoods, social relationships, and connection to the territory. The loss of water sources, biodiversity, and shared spaces affects not only material living conditions but also social bonds, senses of belonging, and ways of inhabiting the territory. Likewise, conflicts over water access, collective strategies developed to cope with scarcity, and feelings of institutional abandonment demonstrate that megadrought reconfigures the relationships between communities and institutions. Participants expressed expectations for health care that extend beyond traditional biomedical approaches, particularly valuing community-based work, territorial proximity, psychosocial support, health education, and the incorporation of local knowledge for climate adaptation. These findings highlight the importance of integrating community knowledge into understanding the impacts of climate change and into the design of health adaptation strategies. Therefore, strengthening intersectoral responses that articulate health, water management, rural development, and climate adaptation emerges as a priority for promoting community resilience and advancing toward more sustainable, equitable, and healthier rural territories.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

AI disclosure statement

The authors used ChatGPT (OpenAI), for language support, including spelling and grammar review, refinement of written expression, and partial translation of the manuscript. ChatGPT was also used to assist with the English translation of the revised manuscript. The use of this tool was limited to language editing and translation support. It was not used for data collection, analysis, or interpretation. The English-language version was subsequently reviewed by an independent academic reviewer to verify and enhance the linguistic quality of the manuscript. The authors reviewed and verified the accuracy and appropriateness of all content generated or revised with AI assistance and take full responsibility for the content and final version of the manuscript.

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