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Quilombola women from Jequitinhonha (Minas Gerais, Brazil) and access to water and sanitation in the context of COVID-19: a matter of human rights

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Introduction: In Brazil there are currently 3,475 certified quilombo communities, reminiscent of Black communities founded by African enslaved people. In the Jequitinhonha Valley, a semi-arid region located in northeastern Minas Gerais State, Brazil, there are approximately 80 established communities, mostly in hard-to-reach areas with lack of access to water and sanitation services.

Methods: Using the analytical framework of Human Rights to Water and Sanitation (HRWS) and with a gender perspective, this research aimed to analyze how access to water and sanitation occurs in two remaining communities of quilombos (Córrego do Narciso and Córrego do Rocha) located in the Jequitinhonha Valley and how lack of access to these services impacts the health and lifestyle of the population, especially during the COVID-19 pandemic. The study used qualitative methods. Data was collected using individual interviews and focus groups. The data was analyzed using content analyses technique.

Results: The results showed that access to water and sanitation in both communities did not respect the HRWS normative content and the lack of access impacted the lifestyle—the economic, cultural and social traditional activities—and the health of the population, especially for women. During COVID-9 pandemic access to water became even more difficult because the supply by water truck was discontinued producing more insecurity as people in the communities, especially women, needed to go to the city to buy water and food and could not keep isolation.

Discussion: Public policies on access to water for rural populations, especially quilombolas, if guided by the HRWS framework and interwoven with the gender perspective, could ensure guaranteed quality of life for women and can strength their entitlements within their territories.

KEYWORDS

water, sanitation, human rights, women, quilombolas

1 Introduction

Access to water and sanitation were recognized as human rights in 2010 by the United Nations Assembly. After that, countries that ratified the Economic, Social and Cultural Rights covenant, are responsible to protect, promote and respect it. The Human Rights to Water and Sanitation (HRWS) follow human rights principals as access to information, participation, transparency, no discrimination and accountability; and has normative contents that indicated how access to these services must be regulated such as affordability, accessibility, availability, acceptability, quality and privacy. It has been used as a tool to analyze and develop public policies aimed at improving access to these services, which are also crucial to the elaboration of programs and actions to promote the health of populations in vulnerable situation (Brown et al., 2016; Neves-Silva and Heller, 2016).

The COVID-19 pandemic shed light on the need to improve access to water for all, without discrimination, since proper hand washing is an important tool for disease prevention, as shown by the systematic research published by Desye (2021). However, access to water, sanitation, and hygiene services is still a problem worldwide. Data for 2020 indicate that 2 billion people still have no access to safe water sources, and in rural areas, eight out of 10 people do not have basic access. With regard to hygiene facilities, 2.3 billion people do not have basic access to soap and water to wash their hands properly. These data are even more alarming if we consider access to sanitation since 3.6 billion people do not have adequate access, and 2/3 of those who do not even have basic access live in rural areas (WHO/UNICEF, 2021).

In Brazil, according to data from 2020, only 86% of households have access to safe water, 13.5% have basic access, and 0.5% still have unsafe access. For sanitation, only 48.7% have secure access, 41% basic access, 10% unsafe, and 0.3% practice open defecation, with great disparity between urban and rural regions. In the rural region, only 72% have safe access to water; 24% still have basic access to water, 1% have limited access, and 3% have unsafe access. For sanitation, data from the rural region are even worse: there is no information about the population with safe access, and concerning the other levels of access, 63% of households have at least basic access, 0.7% limited, 34% unsafe, and 2.3% practice open defecation (WHO/UNICEF, 2021).

It is already widely discussed that the lack of water has an unfavorable impact on the lives of rural communities, especially women. They are usually responsible for collecting, treating, and distributing water. When the water source is far from their home, they are forced to carry a lot of weight over long distances, which damages their health. The lack of water also reduces the amount available for menstrual hygiene, which can result in genitourinary tract infections. The lack of water is also related to spontaneous abortions and a reduction in the time available to engage in income-generating activities or even in the girls' study time, impacting gender equity at school and work and, consequently, women's autonomy (Sorenson et al., 2011; Pickering and Davis, 2012; Sommer et al., 2015, 2016 p. 68; Baker et al., 2018; Choudhuri and Desai, 2021; Silva and Resende, 2022). In this context, it is necessary to understand and lend visibility to the issue of access to water for women who live in rural areas and use water not only to wash their hands and belongings but also to carry out economic, social, cultural, and healing practices.

Part of the rural population in Brazil are quilombolas, reminiscent of Black communities founded by African enslaved people who were brought to Brazil in colonial times, who developed daily practices of resistance in the maintenance and reproduction of their characteristic ways of life and in the consolidation of their own territories. (Sato and Brandao, 2023).

Therefore, quilombola communities are territories with a set of cultural and social practices, memories, relations with the sacred, and with ancestry from enslaved people of colonial times. Apart from Brazil, quilombos are also present in other Latin America countries as Colombia, Ecuador and Suriname (Silva and Souza, 2022). Although they are culturally and socially rich territories, marked by female leaders in the care and maintenance of the quilombo itself, they have historically been characterized by the lack of access to water, both due to climatic reasons and the state's failure to provide water and sanitation services (Fernandes and Macedo, 2021; Sato and Brandao, 2023).

According to official data, there are currently 3,475 certified reminiscent quilombola communities in (Brasil, 2021). The Jequitinhonha Valley is a semi-arid region located in northeastern Minas Gerais State and characterized by a dry and hot climate with short periods of rain, irregularly dispersed over time and space, resulting in low water supply (Silva I. F. S. et al., 2020). In this area there are approximately 80 established quilombola communities, mostly in hard-to-reach areas, in grottos and "chapadas" (plateaus). In these places, the quilombolas, since the colonization and enslavement periods of the eighteenth and nineteenth centuries, joined together to protect themselves and ensure that they could make their livelihood from the land, in addition to being responsible for food cultivation, traditional knowledge and healing practices, and the preservation of their well-being (Silva I.F.S. et al., 2020; Filho and Paulo, 2017).

Currently, communities compete for access to water with the most diverse economic activities, such as eucalyptus monoculture and, recently, activities associated with iron ore extraction (Martins et al., 2024). However, access to water in these communities constitutes a specific dimension of social exclusion and one of the facets of Brazilian structural racism. Structural racism is a concept that highlights how societal structures and institutions perpetuate racial inequalities and discrimination through inequities in access to political, economic, social and health resources (Dean and Thorpe, 2022). Since most other rural communities in the region receive treated water from public service providers, the water issue is also political, social, and racial.

Using the analytical framework of Human Rights to Water and Sanitation (HRWS) and with a gender perspective, this research aimed to analyze how access to water and sanitation occurs in two remaining communities of quilombolas located in the Jequitinhonha Valley and how lack of access to these services impacts the health and lifestyle of the population.

2 Materials and methods

2.1 Research site

The reminiscent quilombola communities studied are located in rural areas of the municipalities of Araçuaí (Córrego do Narciso) and

Chapada do Norte (Córrego do Rocha), in the Middle Jequitinhonha region of northeast Minas Gerais.

These sites were chosen due to researchers' previous knowledge about precarious access to water in the region, arising from claims made by female leaders of the communities that belong to the Quilombola Federation of the State of Minas Gerais—N'Golo. In October 2020, these communities were visited in partnership with N'Golo and Mídia Ninja (a media network focused on political activism) to report and publicize the human rights violations experienced by communities during COVID-19 pandemic.

There are approximately 72 families in the Córrego do Narciso community, located in Araçuaí. Of these, most families, especially men, are outside of the territory working in agriculture (such as planting sugarcane and coffee, for example) during specific periods of severe drought. The municipality has a total population of 36,715 inhabitants, of which 12,578 (34.9%) are in rural areas (IBGE CENSO, 2010). There are 3,362 rural households, of which only 4.6% have adequate sanitation (IBGE CENSO, 2010). The total water service index, including urban and rural populations, is 69.7% (SNIS, 2019). The community has been fighting for water access for over 30 years. It is important to note that there is a water retention dam at the community entrance called Calhauzinho, which is the responsibility of Minas Gerais Energy Company (CEMIG). This dam irrigates the extensive banana monoculture located within the quilombola territory.

Approximately 54 families live in the Córrego do Rocha community in Chapada do Norte. The municipality has a total population of 15,334 inhabitants, of which 9,157 (63%) are in rural areas (IBGE CENSO, 2010). Only 19.6% of the municipality's sanitary sewage is considered adequate (IBGE CENSO, 2010). The total water service index, including urban and rural populations, is 83.7% (SNIS, 2019). The community does not have any river course in the vicinity of its territory, and all its streams, as well as in Córrego do Narciso, are dry in the dry season.

Both communities are experiencing the dramatic impact of eucalyptus monoculture in the region and drilling, precariously, artesian wells. In addition, they benefit from the rainwater collection tanks resulting from the One Million Cisterns Program (P1MC), developed by the Brazilian Semi-arid Articulation (ASA), a civil society network that protect and advocate for the communities' rights living in the semi-arid region in Brazil.

2.2 Data collection

The study used a qualitative method and data collection took place in two stages. First, individual interviews were conducted based on a semi-structured interview script with seven women from Córrego do Narciso and eight women from Córrego do Rocha in July 2021. The women to be interviewed are chosen as they are considered, by the communities, key-informants and leaders. The script focused on the pandemic's impacts on health, food security, access to water, income, and an overload of domestic work and care. Subsequently, in a visit carried out in September 2021, four women were interviewed in Córrego do Narciso, and four in Córrego do Rocha, based on a semi-structured interview script using the HRWS and traditional health-related knowledge as references. During this visit, focus groups on human rights were also held, with people attending a meeting convened by the representatives of each community's resident

associations. Two focus groups were held, one in each community. Twenty-five people participated in the Córrego do Narciso community focus group (20 women and 5 men), and 15 people participated in the Córrego do Rocha community focus group (12 women and 3 men).

In addition to the interviews and focus groups, data were collected through participant observation at specific periods *in loco*. Three trips were made to the field between July and October 2021 to immerse the researchers in the reality of the communities for field diary notes.

2.3 Data analysis

The collected data were analyzed using the content analysis technique (Bardin, 2011). Based on the interview transcription and considering the theoretical references of HRWS and gender aspects, 5 thematic categories were identified: water as a human right; the centrality of water in the life of quilombolas; the relationship between the land and migration; women as "head" of the family and the community; the impact of the pandemic.

The quotation used as examples came from the data collected during focus groups and interviews and were identified in two ways. With regard to participants of the focus group on HRWS, identification was made considering the gender of those who spoke and the community they belonged to. Individual interviews included only women; they were identified by the order in which they were interviewed and the community to which they belonged.

2.4 Ethical considerations

It is important to note that this research is intended to be a part of two projects approved by the Fiocruz Minas Ethics Committee and the National Ethics Commission (COEP), CAAE protocols 39133020.8.0000.5091 (COVID-19, risk, impact, and gender response) and 43259121.3.0000.5091 (Quilombola and COVID-19 communities: development of social technologies for health promotion in the Middle Jequitinhonha, Minas Gerais). All participants received the Free and Informed Consent Form that contained information about the projects and ensured anonymity, and had their oral consent recorded.

3 Results

3.1 Water as a human right

The municipality had to be responsible for supplying us with water (Woman¹, Córrego do Rocha).

When analyzing the quilombola community's access to water from the perspective of the HRWS, it is clear that there has been noncompliance with regulatory aspects of the rights, which suggests

1 Citations in this section were taken from a workshop on water as a human right. As it is a collective recording, it was not possible to identify the speaker. In the other citations, numbering was used to identify different speakers.

a violation of rights. Regarding the availability of access to services, the community reports that water often arrives through a water truck that fills the rainwater cisterns. However, due to a lack of maintenance, in many cases, the cisterns are not watertight, which causes loss of water.

This cistern program has not been serviced. Mine included. They add water one day, and by the next day, it is empty; the water leaks out (Woman, Córrego Narciso).

Since water is not available whenever people, especially women, need it, they seek water from alternative sources that can be unsafe, brackish, or rusty, possibly endangering people's health. It is also worth noting that people often walk long distances carrying heavy loads of water.

Women are more affected by the lack of water. When water runs out at home, it's more the women who have to get it. They'll do the laundry, and they'll cook (Woman, Córrego do Narciso).

I went to the dam to get some water myself. That's the only way to get water when the cistern dries out. It's been two months without water for us (Woman, Córrego do Rocha).

When I didn't have the cistern, I looked for water all day. It didn't matter what time; when I needed it, I went looking for it (Woman, Córrego do Rocha).

The miner's water has rust. The water has a little salt and rust. If too much time passes, it tastes different from the treated water. The miner's water tastes like salt and rust. We wash the box and put the water in the box, and we don't use chlorine (Woman, Córrego Narciso).

Due to the lack of access to water, people in communities sometimes have to buy water, which impacts access to other essential items, demonstrating that the regulatory aspect of economic accessibility of HRWS is not being respected.

A lady who lived in the community had to use the money she would spend to buy food, buying water (Woman, Córrego do Narciso).

It is important to emphasize that water, especially for people living in rural areas, is important not only for washing things and cooking but also for irrigating crops that serve both for community subsistence and generating income. Thus, the lack of water impacts access to food, leading to food insecurity and increasing the vulnerability of families.

There was already a day that we got a basic food basket with rice and beans, but we had no water to cook with (Woman, Córrego do Narciso).

We also need water for the animals; we give it to the pigs, chickens, and crops (Woman, Córrego do Rocha).

I had a little crop of onion there, and it is already dying (Woman, Córrego do Narciso).

Regarding sanitation, the community states that few houses have access to bathrooms, and most of the population uses the septic tank with leach fields in their homes. This is a problem for people with reduced mobility who cannot get around and even for others who feel that their privacy is not being respected and, as a result, have difficulty using the bathroom.

Most people don't have a bathroom at home. Whoever has to go to the bathroom goes outside the house and doesn't use the toilet (Man, Córrego do Narciso).

How does an older adult who no longer walks and uses a wheelchair, how will you take them out to the woods? Then you have to go into town. My mother-in-law stayed in bed for 11 years; we took the bucket to the bedroom and then washed it because she couldn't stand going out to the woods anymore (Woman, Córrego do Narciso).

My nephew, who came from the city to visit my mother, didn't poop; he didn't do it in the woods. He was embarrassed (Woman, Córrego do Narciso).

Notably, the lack of water results in numerous losses for the population in terms of access to healthy food and income and leads to countless health problems due to the difficulty in maintaining proper hygiene regarding hands, food, and community spaces, such as school bathrooms.

It should be noted that the community is aware that access to water is a right and should be treated as a common good guaranteed to everyone by the public administration. Once it is recognized as a right, the community can be considered the holder of rights, and the state is responsible for its guarantee.

I think it's not fair; water is a common good, everyone's good, and if we are human beings, we vote and pay taxes. I think the least the government could be doing is giving us the right we have, and that's what we're fighting for (Woman, Córrego do Rocha).

3.2 The centrality of water in the life of quilombolas

Water is life. And water is life itself. It's real life (Woman 9, Córrego do Narciso).

In Córrego do Narciso and Córrego do Rocha, one often hears the phrase "water is life. At least two communities were named after streams ("córregos"). In the not-too-distant past, every social organization of the communities was organized:

When my mother raised us in childhood, this stream was not dry. Since 2013, the rain has started to decrease, I think. My late mother raised us in the creek mining. When she wasn't on the farm, she was digging. Because if there was no income on my mother's side, my father also had no income. (...) Then my mother would spend some time on the farm and some time in the stream, digging for gold to support us. There everyone went to the stream; the big kids, right, the little kids, the babies, and

so that was our childhood, right? (Woman 8, Córrego do Rocha).

Water is not only a source of sustenance, but it marks the passage of time, activities, traditions, care practices, relationships, and life stories. This centrality of water in the lives of quilombola women makes its lack the root of the main “problems.” A woman speaks of water as the only determinant of life in her community and highlights the contrast between dry weather and “water” weather as if there were two Jequitinhonhas:

But if you came here at the time of the waters, you would say: Oh, guys, but here it's really good; it makes me want to live here. Here it's green; there's water for all sides, you can't handle it (...) Here [at the time of] the waters, here, it's very good, but when it's in the dry season, only the water is what mistreats us. (...) The hardest [part] here is just the water (Woman 9, Córrego do Rocha).

She says that “[at the time of] the waters,” everything is rushed; it is when we have to wake up early and spend the day working on the land. The dry weather involves waiting, planning, and time to protect the seeds for when they can be planted. As another woman, a resident of Córrego do Rocha, says: “My mother, the “andú” [beans] she plants, the beans, she collects it, she stores it. This year we already have beans — when it rains, just go to the land and plant them.” Life is marked by this seasonality of water.

On the other hand, rain can cause problems, like impacting communities' access to neighboring cities due to the precariousness of roads. Another participant says that in Córrego do Rocha, “When the first storm comes, if it is a really good storm, that's the end of that road.” Isolation in the rainy season is a concern, especially when there are health problems and the need to seek care, which always involves an extensive journey, carried out in the most different ways: a same section of the road can be traveled on horseback, on foot, by wheelbarrow, on someone else's lap, by motorcycle or by car. Maria takes care of two children and a physically disabled sister-in-law and had to pay from her own pocket to build a road to her house after getting tired of demanding that this be done by the city. She reports the difficulties she has already experienced as a result:

When my children get sick, or my sister-in-law ... for me to take them is sad. And I carry them in the wheelbarrow or take them in the trunk to the stream crossing there; when it breaks, when it's the water, it's a real burden (Woman 1, Córrego do Rocha).

Despite this problem, rains are still considered a blessing, as it is currently from them that much of the water supply in the two communities comes through cisterns, wide fields, and small dams. Rainwater is seen as a divine gift, according to several women: “water that God poured on the ground”; “the water of rain, of the earth, that God sent; “God will not let me die of thirst”; “That dry area, there, dry, dry, dry, dry. Only God will have mercy on us, right?” Some women have reported using chlorine provided by health officials or P&G sachets donated by NGOs to purify water for drinking, but not all engage in this practice since they believe rainwater is clean. In the dry season, rainwater reservoirs are insufficient, and families must depend on municipal or private water trucks. A woman says that the city only sends a truck every 2 months and that the amount of water is not

enough for this time: “[It's supposed to last] for 60 days, for example, with a truck of 12,000 [liters], sometimes 8,000 liters, to be for 60 days. It is something that you go through a lot of difficulties; it is a very sad thing” (Woman 7, Córrego do Narciso). In addition, another woman reports that the county truck takes a long time to arrive: “It has happened here where we ask for it, but it takes too long, and since we cannot survive without water, we have to save as much as we can for us to go buy it, right? (Woman 3, Córrego do Rocha). A participant says that the trucks arrive faster in election season, but that in general, “if you schedule a tank truck, it goes 30 days, up to 90 days without water” (Woman 4, Córrego do Narciso).

3.3 Relationship with territory and migration

And I'm here until the day God says: "I'm going to take you." Because I don't plan to move from here either, I've gotten used to it. Like I told you, I don't even like going to the city; I don't like it; the day I go to the city, I end up with a headache. Because we already got used to this little piece of land here, and that's just me, right? And lack of water, we don't have water, but we get used to it, right? (Woman 5, Córrego do Rocha).

To quilombola women, the land represents more than just physical space. It means affections, customs, relationships, and ancestry. Despite the limitations linked to the lack of water, many women continue to stand firm, occupying the land they have built their history for many generations. The lack of water, however, has forced more and more families to move:

It is so sad for the family that leaves and so sad for the family that stands firm. Because quilombo is resistance, right? So, it is for those who stand firm. For example, how many families have you seen here today, right? Who are here? And how many houses are locked up in there? Why didn't they stand firm? And what about sorrow? (Woman 2, Córrego do Rocha).

In addition to the migration of entire families, in many cases, it is mainly the migration of men who harvest coffee or cut sugarcane while women remain guardians of the land. Because of this fact, long ago, these women were called “widows of living husbands” because they were alone with their children and relatives while planting and harvesting.

Then he was far away, so it was just me who was moving around at home. I was... there were times when I was [alone for] six months. Because there... their base stay is only six months, right? Then another time... another time, it wasn't six; it was a while longer. It's always like this. After we got married, he traveled, well, some... I don't know how many trips right, but it was, well, a few times (Woman 5, Córrego do Rocha).

The struggle by quilombola women to protect their land is historic and involves the issue of water. Lack of access to water makes it difficult to carry out cultural, social, income-generating, and care-related activities, so families are indirectly forced to leave their land, which is a way to expropriate locations with an economic

interest in agribusiness and/or mining. Associated with this is the insecurity regarding land ownership since several quilombolas are not land-entitled, which generates constant concern among female leaders:

It's because we in the community want to demarcate the territory. Because after we were recognized as a quilombo, many people are buying land there, and sometimes, we explain it, but people do not understand; they say that we do not have this right yet and that we only have a certificate. And the community is not pleased with the people who are coming in, and we have nothing to verify that they are not allowed to come in here (Woman 1, Córrego do Narciso).

3.4 Women "head" of families and the community

So, the lives of the men here who have to leave are very complicated. He leaves his wife with a small child; he leaves his pregnant wife; he leaves a small child and always goes because he is the breadwinner, as they say, right? Here you don't have such an income (Woman 7, Córrego do Narciso).

The community's gender relations are, among other things, marked by migration, which is related to the lack of water and, consequently, to job opportunities and planting. With husbands and children forced to migrate, women face the challenge of caring for their families and communities alone. Some can produce food to sell at the open-air market with the little water they have access to:

Because the mothers here, some housewives go to the open-air market every Saturday to sell their little things, those who have water nearby have some vegetables to sell, which are leafy vegetables, right? Greens. Some chickens breed in the yard, right? Redneck chickens, redneck eggs. Cassava. And it's going to sell. Bananas, that sort of thing, and it's going to sell (Woman 7, Córrego do Narciso).

In addition, many men return from migration incapacitated for work, due to years of heavy work in crops, as described by a participant:

My husband does not work with anything because he is sick. My husband has a back problem and was working on the sugarcane cutting in 2011; since then, you know, I have become head of the family. Since then, unfortunately, my husband has done nothing. Because I deal with pork, I deal with chicken; I work on the land, I gather firewood, I'm the one who gathers firewood, I'm the one who cuts, I'm the one who weeds, I'm the one who plants alone, I build pigsties, I build chicken coops. My husband doesn't do it because he's not up to it, not even to clean the house with a wipe; he can't do it for me" (Woman 7, Córrego do Narciso).

In addition to being the "head of the family," this woman is one of the community's most important leaders and has been looking for help to solve the water issue for years. Her main struggle is to get the water from the Calhauzinho dam, near Córrego do Narciso, to reach

the community, something she has been waiting to happen for more than 20 years:

It is something that you go through a lot of difficulties; it is a very sad thing because of the water; there have been many years that we have struggled with this water. The water there in the dam, which is not five kilometers away from the community to the dam, where is the place that they... they take the water, pull the water for us, it's less than five kilometers. And they keep scamming us like this, and we're always waiting, waiting, waiting, and it never comes (Woman 7, Córrego do Narciso).

Like her, another participant is a leader in Córrego do Rocha and relates her historical struggle to get all the families in her community to have access to water:

The biggest complaint now is the lack of water. The lack of water here for us has been a total lack of water since 2018, so it has been three years since the county government came, and we were fighting to turn on the pump to supply families as it was already routine (Woman 7, Córrego do Rocha).

After repeated negotiations with the local government, there was an agreement for the community to open ditches for later installation of the pipes by the government. After days of hard work, another promise was not fulfilled, as reported:

Then the community gathered a small group of people to dig ditches, and they said that if the ditches were drilled, the pipes would come to enable water channeling, but this didn't happen. Two women came to work intensively in drilling these ditches to install the pipes, and two ladies worked for more than 16 days without receiving a cent because it was the agreement, but this agreement is worth it from the moment that the city fulfills their part of the agreement. We've done our part, but the county government hasn't so far (Woman 7, Córrego do Rocha).

3.5 Impact of the pandemic

During this pandemic, everything became harder, everything. So, what was already difficult without the pandemic, the pandemic arrived and devastated us even more. And it was bad enough, wasn't it? (Woman 9, Córrego do Narciso).

During the pandemic, access to water became even more difficult. Supply by water truck was discontinued, in addition to the increase in water consumption due to hygiene practices necessary to prevent the contagion and people staying at home longer. A participant talks about the lack of treated water to sanitize her hands:

The pandemic here has affected [us]. One [situation] that really needs water, right? Every time you have to wash your hands with soap and water. You don't have that water, because water like that from a tank there, that water there is no water for washing hands, right? Because then the dog goes there to bathe, and the frogs go there, right? (Woman 9, Córrego do Rocha).

In addition, the pandemic made it impossible to hold the traditional meetings organized by female leaders to plan collective ways to demand answers from the government regarding the lack of water. This factor acted directly to politically demobilize women, who were excluded from participation in collective meetings, as explained:

You know, not even the meetings we held to talk to each other about the water problem, not even that we could do anymore. Because of the pandemic, right? Then we couldn't meet to talk about the first step we would take to ask for water help. Then, from time to time, we would say: Look, we're going to Araçuaí, we're going to go to the door at county government, make a scene, and ask them, right? To see if they solve this water [issue]. But even that, the pandemic came and ended, [the city] closed, we cannot go anymore (Woman 9, Córrego do Narciso).

The notion of collective is fundamental as a daily practice in both communities, where decisions always go through the assembly of the associations that represent them. In this way, the pandemic greatly impacted women's struggle for water by weakening an important mechanism of the legitimacy of female leaders before the public authorities.

Finally, the lack of water related to the difficulty of planting caused women to break the isolation in search of food in the city markets or to suffer from the lack of food due to the impossibility of entering the city, with the closure imposed during the more critical epidemiological periods, as said by a participant

There's no water; you just have to go to the market and buy it. (...), but you don't know who was becoming sick; sometimes, some were already sick with COVID and transmitted it. We also go there and get sick, right? (...) Sometimes you had something to pick up at the market; it was for today, but today, you couldn't go. Because there were a lot of weeks that even the cars weren't there. The city closed so that we wouldn't go. There was a time when we even went through some hardship, right? Because I couldn't go to Araçuaí to get supplies (Woman 9, Córrego do Narciso).

4 Discussion

Recognizing access to drinking water and sanitation as human rights brings some important characteristics to be considered. We emphasize that this recognition significantly contributes to formulating and implementing public policies regarding access to water and sanitation since it points out how access should be ensured, ensuring that the HRWS is not violated (Brown et al., 2016). In addition, the use of human rights as a reference framework for public policies aimed at rural populations can reduce social inequalities and situations of vulnerability, promote health, and guarantee the autonomy of the different groups living in these areas (Armah et al., 2018; Haider et al., 2018; Mehta, 2014; Brown et al., 2016; Neves-Silva et al., 2020).

It is assumed that access to water is an element to be ensured; that is, people should have guaranteed access to water and sanitation whenever they need it, it needs to be available when people need. Another element is physical accessibility, which recognizes that access to water and sanitation services should occur close to home and

be available to everyone, including children, the elderly, and people with reduced mobility. In turn, economic accessibility ensures that people's expenditure on water or access to sanitation should not jeopardize their enjoyment of other human rights, such as access to other goods essential to the quality of life, like food. Acceptability, in turn, refers to the fact that water should not have characteristics related to bad odor and taste, which leads people to seek alternative and often unhealthy sources, as well as that the solutions, whether for access to water or sanitation, are culturally compatible with the traditions of the community. The quality and safety of access ensure that the water consumed does not cause diseases and, for sanitation, that people do not have direct contact with excrement. In addition, with regard to sanitation, access to toilets must ensure privacy and hygiene to guarantee human dignity (OHCHR, 2010).

In addition to the regulatory aspects, recognizing access to water and sanitation as rights requires countries to guarantee access while respecting basic human rights principles, such as equality and non-discrimination, responsibility, transparency, access to information, and social involvement (OHCHR, 2010). Still, for some authors (Armah et al., 2018; Haider et al., 2018; Mehta, 2014; Goff and Crow, 2014; Hall et al., 2014), the recognition of access to water as a right considers that the needs and demands regarding access are different for the various social groups because of ways of life that are unique. As far as rural communities are concerned, water has a symbolic dimension that needs to be understood and respected. Access to the resource is important not only for drinking and personal and household hygiene but also for food production and specific cultural and income-generating activities, including healing practices. Thus, for these populations, access to water would be essential in the communities' quest for autonomy and health (Mehta, 2014).

Important to say that in Brazil the law 14,026, approved in 2020, supports the privatization of water and sanitation services. This law is aligned with the liberal agenda boosted in 1980s and the Dublin Declaration of 1992 which recognized water as an economic good. In this scenario where private providers might not be interested in guaranteeing access to water and sanitation to vulnerable populations unable to afford the cost of the service, this law can increase the disparity in access between population groups, making universal provision and the guarantee of HRWS challenging. As stated by the General Comment 15 of the Committee on Economic, Social and Cultural Rights, which gave rise to the United Nations resolutions on Human Rights to Water and Sanitation (HRtWS), water should be treated as a social and cultural good and not as an economic good (Neves-Silva et al., 2024).

With that said, and based on the HRWS framework, the results of the present study indicate that access to water and sanitation for the quilombola communities of Córrego do Rocha and Córrego do Narciso fails to respect almost all the regulatory aspects of the HRWS, as well as its principles. This has resulted in negative impacts on the health of the communities, particularly women, and especially during the COVID-19 pandemic.

As noted, for quilombola communities, access to water is essential not only for hydration and personal and household hygiene but also to ensure that the communities' cultural, social, and economic practices can be fully and properly carried out. Aligned with the concept of ecosystem service, which according to Costanza et al. (2017) refers to the benefits people obtain from nature, water represents life cycles and the good life for these

communities, permeating daily activities carried out in their territory, such as agriculture, the raising of small animals, and health care. In this respect, the lack of access to water is interdependent and interrelated with the commitment to other human rights, such as access to food, care in the cultivation of medicinal plants, land management, animal care, and the symbolic interrelationships that occur in the territory. This shortage leads to the search for alternative sources of water that are unsuitable for consumption (Filho and Paulo, 2017; Rückert and Aranha, 2018; Neves-Silva et al., 2020; Silva J. L. et al., 2020; Peixoto et al., 2020). Important to say that ecosystem disservices, which refers to the harm and negative impact ecosystem can impose to people causing damage and costs, are also seen in this communities and it occurs, per example, when, during the rainy season, the floods cause isolation and difficulty of getting sick people to a doctor due roads blockage.

When income generation practices are not guaranteed, especially concerning agricultural activities, there is an impact on the food sovereignty of the population, in addition to the appropriation of the territory, by the increase in the occurrence of migration, especially of men, who go out in search of other forms of income generation. In the research carried out, it was observed that, in periods of drought, the physical dispersion of men in search of employment in agriculture or companies in the region makes the care of the family and the territory centralized in women. Thus, women are bequeathed the centrality of manufacturing all the community's good living, including the struggle for water access policies and ancestral health knowledge in the absence of public health management. Therefore, migration, in addition to compromising the permanence of the population in the countryside and the transmission of knowledge that promotes the cultural identity of quilombolas, increases the burden on women alone in communities (Silva and Resende, 2022; Neves-Silva et al., 2020; Filho and Paulo, 2017; Fontoura Júnior et al., 2011).

As already reported in several studies, the division of labor surrounding water collection is sexist, and women are responsible for care of the house and the children (Sorenson et al., 2011; Pickering and Davis, 2012; Sommer et al., 2015, 2016; Baker et al., 2018). Thus, to ensure a minimum of access, women would often travel to alternative sources where the water quality is unfit for consumption, as noted in this study, which can pose health risks. In these communities, since they had to fetch water from the river and carry heavy pots since they were children, women, in particular, face health problems at a young age, such as back pain and the appearance of varicose veins. Often, by age 35 or 40, they already have to apply to the state for retirement or sick benefits due to health problems.

Moreover, increased water consumption in rural communities directly affects the well-being of women, who become healthier and have more time to engage in income-generating activities, improving local economic development. In addition, improved access increases the amount of water used in agricultural activities resulting in better planting and quality family food (Silva I. F. S. et al., 2020; Choudhuri and Desai, 2021; Silva and Resende, 2022; Winter et al., 2021).

The lack of access to sanitation is also a problem in communities, as few houses have access to a toilet, which leads to embarrassment and loss of dignity, especially for those with reduced mobility. In addition, the lack of access to both water and sanitation prevents women from practicing personal hygiene and managing menstruation adequately, resulting in feelings of shame, stress, fear, and anxiety

(Habid, 2020; Sorenson et al., 2011; Sommer et al., 2015, 2016; Bisung and Elliott, 2017).

It is important to emphasize that, with regard to quilombola communities, women play leading roles in the quilombola struggle and resistance, and they are recognized as local leaders, responsible for activities that connect relatives and neighbors. Quilombola women are recognized as the pillar of the family, the one who supports, protects, helps, and assists their loved ones, the foundation on which the family and all its components are based (Silva J. L. et al., 2020). In the same sense, gender is a *sine qua non* factor for us to think not only about issues related to access to water and the determinants of health and disease in the face of water and territorial insecurity experienced by women, which needs to be inserted as a transversal theme in public policies aimed at these communities (Valente et al., 2021). Women manage the dynamics of the water trucks. When there was no water in the communities the local government send a truck to delivery it, and the women are the ones to organize the communities in order to get the water from the trucks. Also, they engaged in the necessary dialogue so that the quilombo is supplied in periods of drought. It is also women, as leaders, guardians of memory, knowledge, and care, able to manipulate the plants to be used in traditional medicines, who suffer directly from the impact of lack of water (Silva I. F. S. et al., 2020).

Interestingly, although water exists, its access is hindered by several factors, including the practice of monoculture eucalyptus plantations and large estates with cattle pastures, associated with intense environmental degradation and riparian forests, which cause the region's rivers to be affected in several ways. In the past, these territories had perennial rivers and springs of water, although with low flow in periods of drought, enough for subsistence agriculture and supply to families, in addition to surplus production for exchanges and sale. Although there was never a supply infrastructure that brought water to the houses, collecting water in buckets and later with hoses was possible. Therefore, we must point out that conflicts over water use also indicate a clash of forces and interests of several parties who compete over the ownership of land (Bordalo, 2019). Thus, it is possible to affirm that the dispute for access to water mobilizes important concepts in the quilombola reality, especially the notion of territory, the carrying out of practices, and women's way of life that impact their lives. This is even more important in the face of climate change, in which more extreme droughts and deregulation of water supplies are predicted, which result may reflect on the quilombolas as future climate-displaced people. Effects of climate change disproportionality affect groups as women, racialised and minoritised groups, individuals living in poverty, and those in the global south (Sato and Brandao, 2023). This is a consequence of environment racism, a subtype of structural racism that includes the use of racist practices in determining which communities receive health-protective infrastructure, such as water and sanitation services, and which receive industrial complexes and pollution (Salas, 2021).

It should be considered that during the pandemic, hand washing with soap and water was one of the practices considered essential for the prevention of contagion, which led families to increase the number of times and the duration of this practice by up to five times, increasing the water demand (Amuakwa-Mensah et al., 2021; Gondo and Kolawole, 2022). In places like the communities studied where access to water is scarce, COVID-19 prevention measures, including social distancing, were impaired, as women had to leave their homes to seek water, thus placing them in a more vulnerable situation, as also pointed

out by the study by [Stoler et al. \(2021\)](#). These situations, associated with the fact that women are responsible for caring for the household, including water collection, may have increased the cases of mental health-related diseases, such as depression and anxiety ([Hossain, 2021](#)).

Therefore, the lack of access to water, coupled with the lack of resources allocated to these communities, reflects a scenario composed of various types of problems related to the population's quality of life. In this sense, discussing access to water and sanitation as human rights represents an important step in raising awareness and empowerment of these communities regarding their rights and guarantees of access to these services and other entitlements within their territories. Public policies related to access to water and sanitation needed to be discussed in a human rights approach in order to respect traditional culture and is essential to include women in the decision making process.

5 Conclusion

The present research shows how, historically, the lack of access to water caused the quilombola communities of the Jequitinhonha valley region to find themselves in the most diverse precarious situations, directly reflected in their well-being and their relations with health, territoriality, knowledge, and cultural practices, food, and ancestry. Recently, the drought of artesian wells and dependence on water trucks have subjected these communities, especially women, to numerous vulnerabilities, including increased cost of living, reduced food planting and consequent food insecurity, difficulty in maintaining their good life in the territory, increased displacement and population migration in search of better living conditions, as well as greater susceptibility to COVID-19.

It should also be noted that public policies on access to water for rural populations, especially quilombolas, if guided by the HRWS framework and interwoven with the gender perspective, ensure guaranteed quality of life for women, in addition to highlighting the specific economic, cultural and social issues of these communities.

Finally, it is noteworthy that women play a fundamental role in the struggle for the right to water in the quilombola communities presented here. They, the tough women, aware of their rights and duties, are the ones who play the role of caregiver and controller of water in their families and the community as a whole. They are the ones that claim with local managers, carrying the demands of the associations over which they preside, protesting at the doors of county governments and their respective public offices. They do all this without losing their sensitivity, faith in the struggle, and the dream of seeing water flow from the faucets of their house. By engaging in the struggle for water, these women have advanced a broader agenda of Brazil's quilombola communities since the nineteenth century; it is one for freedom, democracy, land rights, culture, and food security. They are seeking a new way to live, and water is a fundamental part of this "new" plan for living.

Data availability statement

The datasets presented in this article are not readily available because regarding our ethical protocol and terms of confidentiality, sign and approved by the communities, the data are confidential, only the researchers will have access to it. Important to say that those

groups are in a conflict situation with powerful groups, therefore the data will remain confidential. Requests to access the datasets should be directed to priscila.neves31@gmail.com.

Ethics statement

The studies involving humans were approved by Fiocruz Minas Ethics Committee and the National Ethics Commission. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

PN-S: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. BS: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. FG: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. EA: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. SS: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. PV: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. DP: Funding acquisition, Project administration, Supervision, Writing – original draft, Writing – review & editing. LH: Supervision, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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