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Unravelling the potential relationship between the climate crisis and the health of migrant children in LAC: perceptions from migrant parents and healthcare professionals in Chile

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ABSTRACT

Introduction Latin America and the Caribbean (LAC) is one of the regions most affected by the climate crisis, which is connected to international migration through a complex nexus. During the last years, migratory flows on the continent have increasingly included children and adolescents who are migrating through non-authorised crossing points. The existing literature shows how inequities negatively affect migrant children and the role that healthcare systems can play to mitigate them.

Objective Based on a qualitative study, the paper aims to analyse the role of the climate crisis on the healthcare needs of migrant children from LAC who are currently living in Chile, from the point of view of parents from five main countries of immigration in Chile and healthcare professionals.

Method An exploratory study was conducted in Arica, Antofagasta and Santiago. In-depth interviews with 20 migrant parents and 20 healthcare professionals were carried out. The interviews were transcribed verbatim and a thematic analysis was performed.

Results Three findings emerged from this study: (1) food insecurity affects LAC migrant children in their country of origin and during their migratory trajectories to Chile, (2) natural disasters and environmental degradation in the countries of origin are not the only drivers of migration for LAC families but also prevent returns, even when they remain undocumented and (3) LAC migrant children are exposed to urban pollution and contaminants in informal settlements due to difficulties in accessing formal housing, among others.

Conclusions The climate crisis must be integrated into the study of migrant health in LAC, considering the current context of multiple political, health and economic crises in the region. Healthcare professionals and communities play a central role in creating interventions to build sustainable and resilient universal healthcare systems.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Latin America and the Caribbean (LAC) is one of the regions most affected by climate crisis.
⇒ Recently, the presence of children has increased within migratory flows in LAC, and an increasing amount of children cross borders through unauthorised crossing paths.
⇒ The literature shows the different inequities faced by migrant children versus local children in terms of access to health, exposure to preventable diseases, sexual and reproductive health, and mental health.
⇒ Healthcare teams, in their relationship with communities, are central to creating interventions that reduce the inequities faced by the most vulnerable populations such as migrant children.
⇒ Little research has addressed the relationship between the climate crisis and the healthcare needs of migrant children in LAC, or the role that professionals and communities can play in creating interventions to mitigate the effects of the climate crisis on the health of migrant children.

INTRODUCTION

The movement of international migrants, defined as 'any person who is moving or has moved across an international border (…) away from his/her habitual place of residence' regardless of their migratory status'[1] has increased in Latin America and the Caribbean (LAC). While North America and Europe remain the main destinations for populations from LAC, migration within the region experienced a dramatic increase of 83.2% between 2010 and 2020. This trend has been driven by factors such as stricter immigration regulations in the USA, economic growth in some LAC countries and political crises in Venezuela and Haiti.[2 3] These migratory patterns increasingly include children and adolescents. At the international level, they represent 15% of all international migrants. However, in LAC, children and adolescents represent 26% of all international migrants. Furthermore, this percentage has increased, especially within irregular migratory movements.[4] In addition, LAC have been considered one of the regions most affected by the climate crisis,[5] including changes

WHAT THIS STUDY ADDS

⇒ The climate crisis is a driver of migration for LAC families in the region and could have direct and indirect influences on health conditions among migrant children.
⇒ The study describes some potential connections between the healthcare needs of migrant children and conditions related to the climate crisis.
⇒ Food insecurity is identified in the countries of origin and throughout migration trajectories, with potential effects on the well-being of migrant children, such as chronic malnutrition.
⇒ Natural disasters and environmental degradation are identified as relevant drivers of migration. The impossibility of returning to the country of origin because of this also explains immobility in Chile, despite irregular migratory conditions, as well as secondary migration patterns for groups of migrants that include children.
⇒ Due to difficulties in accessing housing in Chile, some migrant families with children live in informal settlements, where they are often exposed to contaminants, parasites, lack of access to sanitation and drinking water, among others.
⇒ Healthcare teams and migrant communities are aware of these needs and risks faced by migrant children, but currently lack the tools to address them.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The study shows the urgency of integrating the climate crisis into current debates on the health of international migrants, identifying the role that communities and healthcare professionals can play in finding solutions.
⇒ The study recommends specific adaptations to healthcare systems, as well as guaranteeing social protection for vulnerable groups such as children coming from food -insecure countries, children in irregular migratory conditions and children living in informal settlements.
⇒ It highlights the role that health professionals, authorities, policy -makers and communities can play in designing universal, sustainable, and resilient healthcare systems.
⇒ Future research should further investigate the topic, using mixed methods and integrating the voice of children and adolescents.

in rainfall patterns, a sharp rise in extreme heat and, higher risks of droughts, intensified tropical cyclones and increased dryness. All these environmental changes have direct consequences on agriculture and food security, access to clean water and exposure to pollution.[6] Although the climate crisis and international migration nexus is complex, there is a growing recognition of the role that environmental factors play in shaping international migration patterns. Furthermore, there is evidence of how extractivist development models interact with other social, political or economic push/pull factors.[7] The WHO emphasises the risks to human health brought by climate change,[8] especially among vulnerable groups, such as migrant children and adolescents.

There is a range of studies on the impact of migration on the health of children and adolescents.[9] Among those conducted in LAC, the diverse inequalities faced by migrant children regarding access to health and vaccination stand out.[10] Specifically, there are studies highlighting the overuse of emergency services,[9] the exposure to preventable infectious diseases,[11] the lack of access to sexual and reproductive healthcare among migrant adolescents,[12] as well as the consequences of migration on the mental health of children and caregivers.[13] Although most of these studies identify structural factors determining migration among children in LAC, such as violence, political crises, poverty and inequalities,[14] few have explored the role played by the climate crisis on the health conditions of these groups.[7]

Health systems have been recognised as central to the mitigation of inequities affecting populations who may face social vulnerability such as migrant children, especially in their relationship with communities.[15] Primary care is a widely recognised social right that must be effectively guaranteed. In terms of global change, healthcare professionals have been identified as one of the most trusted source of information regarding the health implications of climate change.[16] Furthermore, it is considered that primary care must be explicitly included in public policies aiming at mitigating the impacts of climate crisis on patients' health outcomes.[16] Nonetheless, despite the increasing efforts of health professionals, the existing literature shows that they do not necessarily feel prepared to address these topics with their patients nor to carry out effective interventions to address the effects of the climate crisis.[16] For example, quantitative studies found that health professionals identified the need to include climate change and environmental sustainability in their training.[17 18] Conversely, a qualitative study showed that having specific competencies regarding climate change and health allowed healthcare workers to implement health promotion practices for the most vulnerable populations.[19] Research including LAC health professionals on this topic support the need to design interdisciplinary and intersectoral solutions.

In this context, this article aims to analyse the role of the climate crisis in determining the health outcomes of migrant children of LAC origin in Chile, as perceived by migrant parents and healthcare professionals. We use the concept of crisis as a way to acknowledge that climate crisis is linked to other political and economic crises that exacerbate existing global inequalities. This study is relevant to support recommendations to strengthen healthcare providers' and communities' resources and tools for the prevention and mitigation of the effects of climate change on the health of migrant children and adolescents.

METHODS

The method section follows the consolidated criteria for reporting qualitative research 32-item checklist.[20]

Study setting

This article presents data from a larger research project focused on experiences and health needs of migrant children, adolescents and adults who entered Chile through

unauthorised crossing points during the COVID-19 pandemic. The substudy reported in this article was carried out exclusively with migrant adults (N=20) and primary healthcare teams (N=20). The study was conducted in two different regions of North Chile and the Metropolitan Region of Santiago. These regions were selected because they represent some of the areas where most of the country's international migrants reside, as 65% of the country's total migrant population live in the Metropolitan region[21] and Tarapacá, Antofagasta, Valparaiso and Arica have the highest proportion of migrant population in the country.[22] Furthermore, the main unauthorised crossing points that were used during the COVID-19 pandemic are located in Northern Chile. Even though it is difficult to quantify the number of children and adolescents who entered through unauthorised crossing paths, existing data indicate that in 2022, 7916 minors entered the country this way.[22] The study was designed as an exploratory study,[23] and it was carried out with the collaboration of Non governmental organizations (NGOs), local primary healthcare services and academic institutions.

Participant selection and recruitment

A total of 40 people participated in the substudy: (a) 20 adult Latin American migrants who had entered Chile at some point since 2020 and who were taking care of children or adolescents during their migration processes; (b) 20 primary healthcare professionals working in the public health system. Data were collected between March 2021 and December 2023 in the cities of Arica, Antofagasta and Santiago. The adult migrants were recruited based on theoretical and practical criteria. The theoretical criterion was the time of migration (when regular borders were closed because of COVID-19 in most Latin American countries) and the fact that they were migrating with children and adolescents. The practical criterion was the feasibility of contacts and recruitment through NGO collaboration. For healthcare teams, a selective sampling strategy was also used, through the theoretical criterion that they provided healthcare to migrant children and adolescents. The teams were contacted directly by the researchers once the study was approved by the ethics committee. Considering that migrant participants can be highly vulnerable, the project refunded transportation costs related to participation. The final sample is described in table 1.

Data collection and setting

In-depth interviews were conducted with migrant adults and semistructured interviews were carried out with staff workers and healthcare teams by the principal investigator (ACC). Each interview followed a guide prepared by ACC and validated by BC. The interviews lasted up to 1.5 hours and were conducted face to face in healthcare centres, NGO offices or in the participants' residence or workplace. The interviews were audio recorded and transcribed in Spanish after securing informed consent from participants.

Data analysis

A thematic analysis of the transcriptions was performed using the Atlas-Ti software. Thematic analysis[24] is a systematisation of qualitative information from a coding process that is based on categories consistent with the research question and linked to the questions in the interview guide. The data were analysed through the independent identification of connected concepts by two members of the research team, creating groups of codes and subcodes. Any discrepancy was discussed and resolved in a consensus meeting with a third team member. For this paper, a native English speaker translated the selected quotations from Spanish to English, then a second translator back-translated the quotations from English to Spanish All authors checked the final translation for accuracy.

Table 1 General sociodemographic characteristics of participants

Universe	Gender		Occupation		Country of origin.	
Adult migrants	F	n=18	Informal trade	n=6	Venezuela	n=10
			Security guard	n=2	Colombia	n=2
			Domestic worker	n=4	Peru	n=2
	M	n=2	Building labourer	n=2	Bolivia	n=2
			Hairdressing salon staff	n=2	Haití	n=4
			Unemployed	n=2		
Subtotal	n=20					
Healthcare teams	F	n=12	Nurse	n=6	Chile	n=18
			Psychologist	n=4		
			Social worker	n=7		
	M	n=3	General practitioner	n=1	Haiti	n=2
			Cultural facilitator	n=2		
Subtotal	n=20					
Total	n=40					

RESULTS

Participants mentioned aspects of their migration process interacting with the climate crisis through the following mechanisms (1) food insecurity in countries of origin and during migration; (2) natural disasters and environmental degradation as barriers to returning to the country of origin and (3) urban pollution and exposure to contaminants in informal settlements in host countries.

Food insecurity in countries of origin and during migration

The results show that not having sufficient food or food of adequate quality was one of the reasons that prompted migration, especially among families coming from countries where the population experienced different types of food insecurity. As explained by a Venezuelan woman:

"I am very afraid that my children will tell me again: "Mom, I am hungry" and it has happened to us, yes, it has happened to us (.) the children are hungry and sometimes we don't have anything to give them. Yes, then we are left traumatized". (Venezuelan woman, 4 children)

Another testimony by an adult migrant brought up the availability of animal proteins, which was not affordable for her family in Venezuela:

"It is true that here (in Chile) it is difficult, but here at least you can give your child a piece of meat, a chicken, something. Back there for years we didn't see that, we just ate rice, sometimes not even that". (Venezuelan woman, 2 children)

The effects of food insecurity in countries of origin and during migration were recognised by healthcare teams, who admitted to receiving undernourished migrant patients, in particular children and pregnant women:

"I never imagined I would see malnutrition issues again, but now we do, we have children with malnutrition and also pregnant women, sometimes very young. They arrive very underweight and tell you that during the trip, which sometimes lasts months, they ate bread, cookies, candies, sweets, nothing nutritious" (Nurse)

This impacts not only health outcomes in terms of children's weight and height, but also in areas such as oral health and immune system development.

'Many cavities, you see many cavities because they are children who sometimes have not had any dental checkup (Nurse)

Although these testimonies do not allow us to claim that malnutrition was due to climate change, the narratives refer to food insecurity, which may be produced by the overlapping of political crisis and environmental degradation, conflict as well as poverty. As one health professional argued, the Chilean healthcare system is not well prepared to address undernutrition and the effects of food insecurity, considering that among the Chilean population, the main public health concerns are obesity and overnutrition.

Natural disasters and environmental degradation as barriers to returning to their country of origin

Although environmental degradation is not considered the primary cause of migration from LAC countries to Chile, the case of the Haitian population is significant in this argument because it links political and ecological crises, exacerbated by natural disasters such as tornadoes (2008, 2012) and earthquakes (2010, 2021) that have left numerous victims and internally displaced persons. In this regard, participants recognised challenges encountered by Haitian families in Chile, especially those who had been part of collective deportations or who had their requests for migratory regularisation rejected. When referring to the possibility of returning to Haiti or seeking new destinations, recent natural disasters and environmental degradation appeared as factors linked to the impossibility of returning to Haiti. As a participant explained:

"O*ne thinks, going back, but where am I going to go back if everything was lost in the earthquake, we had a field in Haiti but now there is no food for my children, no work for me, there is no work*" (Haitian woman, 2 children)

This impossibility of returning has led to new migration patterns from Chile to Mexico and the USA through irregular crossing points, which have involved numerous Haitian children and also Chilean children of Haitian parents. As one cultural facilitator from Haiti explains:

"Here there are many Haitians who arrived after the earthquake, looking for work, to give their children an opportunity. Then if they don't find an opportunity in Chile, they will migrate again, but not to Haiti, they will go to the United States, they will cross the jungle" (Haitian facilitator).

While none of the interviewees had travelled to the USA, some of them said they knew people who had done so, some of them with children:

"There are families who left, they want to go to the United States. Then you lose contact with them, but you know it is dangerous, they go through the jungle, rivers, they drown." (Haitian woman, 2 children)

Healthcare professionals were often not well aware of these migratory patterns in LAC. Furthermore, like the rest of the population, they may be exposed to stigmatising and discriminating narratives that, particularly in the contemporary mass media, tend to criminalise irregular migrants. Cultural facilitators may play a key role in raising awareness of the specific challenges faced by some groups of migrants, for instance, the case of migrants from Haiti whose migratory patterns can be defined by environmental and political conflicts impeding return migration in safe conditions.

Urban pollution and exposure to contaminants in informal settlements in host countries

Another finding revealed the living conditions experienced by migrant families with children in Chile, given the difficulties in finding housing and the growing increase in informal settlements on the peripheries of cities. Many of these informal settlements are located in

areas that are highly exposed to environmental contamination, due to the presence of polymetals, especially in the northern part of the country, or because of contamination linked to the accumulation of waste and lack of sewage and access to drinking water. One interviewee described the symptoms she observed in her children months after arriving at her current place of residence in an informal settlement:

"You see how we live here, there is garbage, dust, so the children got wounds on their skin, spots, rashes (.), it is complicated, but it is the only place we have found because they don't rent to families with children" (Bolivian women, 3 children)

Healthcare providers in charge of this population reported similar situations, having observed pathologies linked to the lack of drinking water, the effect of dust on the skin and respiratory problems.

"You see them arrive with skin full of allergies, respiratory problems and of course, you see how they live, near waste dumps, they don't have drinking water, sewage, then it becomes health problems linked to contamination" (Nurse)

Other problems associated with the environmental conditions of informal settlements are related to parasitosis and the presence of packs of wild dogs representing a threat, especially for children:

"We are seeing again problems of scabies or dog bites, because there are a lot of stray dogs, packs are formed" (Social worker)

Even if exposure to contaminants in informal settlements can affect migrant and local children alike, this evidence shows that barriers to decent housing particularly affect migrant families with children, who are then exposed to urban pollution, lack of drinking water and zoonotic diseases.

DISCUSSION

As supported by the existing international literature,[25] children are physically more vulnerable and have less capacity to withstand and survive the effects of climate change, such as floods, droughts and fires. Additionally, they have more difficulty coping with the effects of toxic substances associated with environmental pollution.[25] From a life-course approach, exposure to these risks has long-term morbidity consequences,[26] overlapping with other social determinants of children's health, such as migration.[27] Our findings reinforce the existing evidence regarding the link between the macro effects of the climate crisis on the environment in LAC and the increased health risks faced by the most vulnerable populations, including migrant children and adolescents. As this is an exploratory study, and due to the complexity of the migration, climate change and health nexus, establishing unidirectional causal relationships or isolating environmental factors from political and economic processes is impossible.[28] However, the results show that phenomena linked to the climate crisis, such as food insecurity, natural disasters and exposure to urban pollution, are creating conditions of heightened health risks for migrant children and adolescents in Chile. It is important to highlight that these factors interact with other ongoing crises, such as political crises in Haiti and Venezuela and issues to access adequate housing in major cities globally.

Consequences associated with food insecurity,[29] in terms of malnutrition among recently arrived migrant children were reported, as well as the transition to high-sugar foods, especially affecting children who have been migrating for longer periods of time.[29 30] As confirmed by several reports, food access and availability have been compromised in countries such as Venezuela and Haiti, with patterns of food consumption that are insufficient in quantity and quality.[31] The case of Haiti is exacerbated by gender and income differences that negatively affect women from rural areas, who face numerous obstacles in accessing healthy food and cultivable land.[32]

This case is connected to the second finding of the study, where environmental degradation and natural disasters are not only mentioned as the reason for migrating[7] but also as being linked to the impossibility of returning to Haiti and to the strengthening of factors that force people to migrate using irregular routes, such as those being followed by Haitian families throughout the continent.[33 34] Children and adolescents included in these flows face numerous risks to their health and well-being.

Finally, some of the conditions experienced by migrant families in host country are also related to the climate crisis. The increase in informal settlements in LAC has been accompanied by an increase in the presence of migrant population residing in them.[35] In the case of Chile, contamination by polymetals in informal settlements in Northern regions and its effects on health have been studied in Chilean children, with results showing behavioural consequences.[36] Other studies have demonstrated the effects that new hazards such as urban air pollution and toxic chemicals have on increased chronic diseases among children in LAC.[37] Likewise, in the USA, a study of migrant children living in rural areas showed risks associated with exposure to pesticides, sunstroke, inhalation of noxious dusts, zoonoses, limited access to water, food insecurity and mental health risks.[38] The data collected here confirm vulnerability of these specific groups to the effects of climate change associated with the various political and social crises facing the continent.

In LAC, climate change intersects with other crises. On one hand, the current migratory crisis has increased the flow of people migrating through unauthorised crossing points, negatively impacting their access to migratory regularisation. On the other hand, COVID-19 strongly affected health systems, local economies and political process in LAC. This context represents an opportunity to reflect on the role that health professionals can play in their relationship with communities to move towards sustainable healthcare systems.[39]

The study has several limitations. First, considering that climate change and its consequences were one of the dimensions, but not the main focus of the study, no ethnographic data were collected to further analyse

the impact of climate change in places of previous or current residence. Second, because of the nature of the recruitment process, the findings show more insights from Venezuela and Haiti than from other LAC countries. Third, as this study had a small sample size and only collected qualitative data in Chile, deepening the analysis of multicausal and global phenomena such as climate change and migration is limited. Future research should include the point of view of children and adolescents and use a wider sample of participants from other LAC countries. Mixed methods could also be used. Finally, health authorities and policy-makers from intersectorial areas should also be involved.

Climate change has not yet been comprehensively explored in studies on child health and migration in LAC. This study shows the effects of food insecurity, exposure to pollutants and environmental degradation on the health of migrant children in countries of origin, transit and destination. The inclusion of the migration factor in health policies for children in LAC must be accompanied by the identification of risks associated with climate change in specific groups such as children living in informal settlements, in irregular conditions or coming from countries affected by food insecurity. Primary care teams and communities need tools to address the effects of climate change at the local and regional levels, considering that they may come to be key actors to mitigate their impact on population health in LAC.

Contributors ACC and BC designed the study, ACC and AB collected data and analysed it. All authors substantially contributed to the conception of the work and the interpretation of the data. All authors validated the results. ACC wrote the first draft and BC and AB revised and edited it. All authors read and approved the final manuscript and all of them contributed to the major revisions required by the peer review process. ACC is the guarantor.

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Competing interests No, there are no competing interests.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval The main study followed the guidelines of research involving human beings, including the Declaration of Helsinki. The study was approved by the Institutional Ethics Committee at Universidad del Desarrollo on 18 March 2022 (#2022-08). Participation was voluntary and all interviewees received information about the aims and procedures of the study prior to their participation in the study. Written informed consent was obtained from all participants. Confidentiality guarantees were given during the consent process. Names and other personal identifiers were removed from transcripts before they were analysed. Only the principal investigator (ACC) has access to personal data collected in informed consent.

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