

Environmental health inequities at COVID-19 pandemic times: challenges and perspectives

Iniquidades em saúde ambiental em tempos de COVID-19: desafios e perspectivas

Iniquidad em salud ambiental en tiempos de COVID-19: desafíos y perspectivas

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Abstract

Negative impacts of the COVID-19 pandemic appear to disproportionately affect different population groups by outweighing the risks in socially and environmentally marginalized segments of society. The aim of the current study is to review on how environmental health inequities have negatively impacted the fight against the COVID-19 pandemic, as well as on challenges and perspectives in the post-pandemic transition context. The saturation of health services at tertiary level, difficulties in getting access to treatment for chronic morbidities, as well as the centuries-old unequal supply of essential environmental sanitation services are determining factors for inequity and pandemic severity levels. Strategies used to minimize disparities in the access to healthcare services have been directed towards integrating primary healthcare services to the health surveillance sector, as well as further developing digital health actions. It is possible concluding that the multidimensionality of the pandemic crisis must be understood based on the socio-environmental systemic perspective, with emphasis on its potential to worsen pre-existing environmental health inequities and to produce new inequities in the future in regions and populations affected by health and environmental vulnerability.

Keywords: Covid-19; Pandemic; Inequities; Environmental health.

Resumo

Os impactos negativos da pandemia de COVID-19 parecem afetar, de modo desproporcional, diferentes grupos populacionais, sobrepujando os riscos em segmentos já marginalizados social e ambientalmente. O objetivo do presente estudo é revisar sobre como as iniquidades em saúde ambiental têm impactado negativamente o enfrentamento à pandemia e quais são os desafios e as perspectivas no contexto de transição pós-pandêmica. A saturação dos serviços de saúde em nível terciário, as dificuldades de acesso ao tratamento de morbidades crônicas, ademais, do problema secular da oferta desigual dos serviços essenciais de saneamento ambiental apresentam-se como determinantes de iniquidades e gravidade da pandemia. Estratégias utilizadas com intenção de minimizar as disparidades de acesso aos cuidados em saúde têm sido direcionadas para a integração dos serviços da atenção primária à saúde ao setor de vigilância em saúde e o avanço no desenvolvimento de ações de saúde digital. A multidimensionalidade da crise pandêmica deve ser entendida sob a perspectiva sistêmica socioambiental, destacando o seu potencial para exacerbar iniquidades preexistentes e produzir novas iniquidades no futuro, especialmente em regiões e populações dominadas por vulnerabilidades ambientais e em saúde.

Palavras-chave: Covid-19; Pandemia; Iniquidades; Saúde ambiental.

Resumen

Los impactos negativos de la pandemia de COVID-19 parecen afectar de manera desproporcionada a diferentes grupos de población, superando los riesgos en segmentos ya social y ambientalmente marginados. Este artículo tiene como objetivo revisar cómo las iniquidad en materia de salud ambiental han repercutido negativamente en la respuesta contra esta pandemia y cuáles son los desafíos y perspectivas en el contexto de la transición post-pandémica. La saturación de los servicios de salud en el nivel terciario, las dificultades para acceder al tratamiento de las morbilidades crónicas, además, el secular problema de la desigual oferta de servicios esenciales de saneamiento ambiental se presentan como determinantes de la iniquidad y severidad de la pandemia. Las estrategias utilizadas con la intención de minimizar las disparidades en el acceso a la salud se han dirigido a la integración de los servicios de atención primaria de salud al sector de la vigilancia en salud y al avance en el desarrollo de acciones de salud digital. La multidimensionalidad de la crisis pandémica debe entenderse desde una perspectiva sistémica socioambiental, destacando su potencial para exacerbar las iniquidad preexistentes y producir nuevas iniquidad en el futuro, especialmente en las regiones y poblaciones dominadas por las vulnerabilidades ambientales y sanitarias.

Palabras clave: Covid-19; Pandemia; Iniquidad; Salud ambiental.

1. Introduction

The COVID-19 pandemic is one of the worst global health challenges of this century, since it accounts for devastating impacts on the health, environment and quality of life of different individuals and societies worldwide (Opas, 2020a).

Higher-income countries in Asia, Europe and North America have been facing the economic consequences of the pandemic and intense social disruption. However, the negative impacts of the COVID-19 pandemic on, and its evolution in, middle- and low-income countries have emphasized a reality of pre-existing social inequities, wherein the disorganization and unpredictability of events affect systems' daily lives, sectors, as well as people's lives and working processes (Lima *et al.*, 2020).

Brazil stands out among the countries mostly affected by the COVID-19 pandemic, in terms of economic, environmental and public health impacts (Urban & Nakada, 2021). The country faces significant challenges since, little is known about the disease, its transmission features, severity evolution, susceptibility and treatment. In other words, the COVID-19 pandemic has arrived in a continental-sized and politically unstable country where great social inequality prevails, since a significant part of its population lives under precarious housing and sanitation conditions, without systematic access to water, as well as in precarious settlements (Werneck & Carvalho, 2020).

Although the entire Brazilian population was affected by the pandemic, its negative effects appear to reach different groups in a disproportional manner, since the lives of population segments socially and environmentally marginalized, mainly individuals who live in poverty, in areas lacking basic sanitation services and facing environmental degradation, are at higher risk (Travassos *et al.*, 2020; Freitas *et al.*, 2020).

Aspects such as isolation, stress, fear, uncertainty, death, suffering, unemployment and economic devastation are featured as COVID-19 pandemic stressors that can lead the most vulnerable individuals to extreme behaviors, such as misuse of medicines and drugs, acts of violence and even suicide (Greff *et al.*, 2020).

Furthermore, individuals presenting chronic health conditions and morbidities, who require intermittent healthcare, such as HIV patients, are also significantly affected by the COVID-19 pandemic, since they are more vulnerable to get infected with the virus or to health complications deriving from it. Moreover, they are at greater risk of facing health inequities resulting from the pandemic (Chenneville *et al.*, 2020).

There is real evidence of health disparities and risk situations deriving from social exclusion, food insecurity and environmental deterioration among COVID-19- vulnerable populations - these data are significant for science, disease management and healthcare services. Thus, it is necessary getting quick and feasible answers from decision makers and health professionals to help minimizing such conditions, since they put human life at risk (Freitas *et al.*, 2020).

Thus, the COVID-19 pandemic has triggered discussions about the pressing need of reestablishing environmental health equity to provide better environmental quality, life and health conditions for all. It is undeniable that environmental health inequities have worsened; consequently, they got more visible, mainly in low- and middle-income countries, during the current global context (Ventura *et al.*, 2020). The field of environmental health refers to the knowledge about the environmental factors (social, chemical, physical and biological) that condition human health and, thus, has supported broad concerns about global health (Giatti *et al.*, 2020).

Thus, it is essential identifying and giving visibility to different aspects associated with the Brazilian context of environmental inequities to enable developing strategies and policies aimed at preventing and solving socio-environmental inequalities in order to minimize the impact of the Covid-19 pandemic on the most vulnerable populations. In light of the foregoing, the aim of the current study is to review on how environmental health inequities have negatively impacted the fight against the COVID-19 pandemic, as well as on challenges and perspectives in the post-pandemic transition context.

2. Methodology

This is a narrative review study with a search for scientific publications in specialized journals in the databases: Pubmed, Scielo, Lilacs, Google Scholar on the theme and its relevant aspects for society and global environmental health. The descriptors used for the search were: COVID-19, Inequities and Environmental Health. The crossing of these descriptors was performed using the Boolean operator “AND”. This non-systematic literature review method was guided by Pereira *et al.* (2018).

3. Results and Discussion

Meanings and challenges adjacent to the current environmental health inequities

Global health issues faced by humanity in the 21st century are associated with factors such as unequal distribution of diseases and health risks worldwide; ways of mitigating the impacts of global environmental changes on human health; and resilience mechanisms adopted by individuals and populations. In addition, aspects related to health policies, institutions and systems deserve attention (Fortes & Ribeiro, 2014).

The complex nature of the COVID-19 pandemic highlights the line of reasoning according to which, the understanding about global health must move towards promoting social justice, equity, solidarity and sustainability. This factor corroborates the logic of promoting health equity for all and of moving towards reducing health risks to individuals, based on

precautionary measures aimed at reducing environmental risks and at solving social, political, economic and geographical issues in different countries and continents. (Ventura *et al.*, 2020; Fortes; Ribeiro, 2014).

The outspread of this acute public health event (COVID-19) - which is highly contagious and leads to severe clinical cases - throughout all geographic regions worldwide has shown that activities carried out by security and public health sectors must be aligned to each other and strengthened. Thus, it is necessary taking into consideration the essential role played by sustainability, mainly in environment-related pandemics (Ventura *et al.*, 2020).

Several currents have emphasized concepts such as equity, justice, rights, compassion and mutual respect as Global Health principles. Social justice, which is a topic addressed in Global Health, has great relevance due to the contribution, allocation and distribution of human, technical and economic resources among countries and regions. It is found in the distributive justice field, which links individuals to the community and to political authorities (Fortes, 2015).

Health equity has significant background in public security. Visible cracks in global health security became evident due to the COVID-19 pandemic. The outspread of COVID-19, which is highly transmissible and leads to severe clinical cases across all geographic regions worldwide, has shown that activities carried out by security and public health sectors must be aligned to each other and strengthened. (Ventura *et al.*, 2020).

Intense exchange between the biological and social spheres plays essential role in health-disease processes. The COVID-19 pandemic has evidenced the importance of broadening the discussion about health determinants and rights in the global health agenda, since it highlighted inequities faced by “invisible” groups, between and within countries.

Inequity refers to the characteristic of something or someone that proves to be contrary to justice, to equality. This term has been used in the public health field as opposite to equity in health, which, in its turn, reflects the condition of all members of a given society who have their right to health ensured in an impartial way.

Health inequities correspond to unequal access to information, care, technologies, resources, services and healthcare system, as well as regard the unequal distribution of risks, needs and health issues in a given population (Almeida-Filho, 2020).

Based on a systemic perspective, one can further broaden the view of this conceptual aspect by joining environmental factors capable of determining health-disease processes. In order to do so, it is necessary understanding that environmental health inequities refer to unfavorable conditions such as environmental degradation or lack of access to public goods and services, which are essential to human health (Moniz *et al.*, 2016).

In Brazil, equity is expressed as one of the main health aspects and guiding principles of the Brazilian Unified Health System (SUS – *Sistema Único de Saúde*), since the promulgation of the 1988 Federal Constitution and the enactment of law n. 8,080, from September 19, 1990. This fact has contributed to reduce or eliminate preventable and unfair health factors, as well as to provide health services capable of meeting the needs deriving from social inequities (Abreu, 2020).

Equity and rights to health were internationally highlighted at exactly 9 years ago, when they were mentioned as topics of the World Conference on Social Determinants of Health, which was held from October 19 to 21, 2011, in Rio de Janeiro, Brazil. At that occasion, the effects of globalization were pointed out as one of the causes associated with worsened social inequalities (Lavor *et al.*, 2012).

The COVID-19 pandemic has evidenced how fast flows, movements, technologies and microorganisms cross borders and affect all societies, even the most organized ones, whose barriers are considered insurmountable. However, it is essential understanding socio-environmental inequalities as factors capable of favoring disease and mortality processes associated with the COVID-19 pandemic, since they can show the regions on the planet where these processes are mostly intense (Blundell *et al.*, 2020).

The American continent, mainly Latin America, is an example of how such a disparate reality, that has been on since 2020. Although the health conditions of Latin American individuals have improved in recent years, they still present

significantly unequal health conditions and needs that can vary between, and within (at regional level), countries (Opas, 2019; Abramo *et al.*, 2020).

Limited or lack of access of the most impoverished population groups to environmental resources, goods and public services exposes them to extreme socio-environmental vulnerability at COVID-19 pandemic times. Thus, these groups are mostly affected by pandemic effects due to lack of and/or insufficient resources and strategies to control the disease in their daily lives. This scenario is associated with difficulties in achieving social isolation and in keeping one's job and income, with poor housing and sanitation conditions and with lesser access to comprehensive healthcare (Farias *et al.*, 2020).

Thus, the unavoidable cycle of diseases is perpetuated through the unification of biological, environmental and social health-disease determinants historically produced by capitalism. This process is what historically generates social inequality and unemployment elements, and it is evident in the COVID-19 context (Souza, 2020).

However, the political discourse based on the neoliberal logic rejects the implementation of disease-prevention measures, such as social distancing. Moreover, it blames social distancing for hindering the economy and for worsening social issues such as unemployment and poverty, whose negative effect on people's health and lives would be worse than that of the pandemic (Souza, 2020).

The same State that promotes equitable public policies, at times, rationalizes interests and conflicts, and drives a historical economic development model capable of generating social inequalities and inequities in environmental health. However, this model is mostly unsustainable because it values and perpetuates a production system that deeply affects the ways of life and governance in the health field (Souza, 2020).

Outbreaks, epidemics and pandemics are critical events capable of generating epidemiological trends, as well as of exposing suffering, injustice and inequality structures in society. The COVID-19 pandemic had real social, economic and health impacts on society, although they are mainly seen as by-products deriving from the continuous and unsustainable movement of life led by capitalism (Segata, 2020).

Illicit Financial Flows (IFFs), which lead to substantial public revenue loss, are factors capable of worsening inequities in several low- and middle-income countries, despite recent progress in health provision. They refer to international transfers of illegally obtained, transferred or used funds (Ortega *et al.*, 2020).

IFFs are the main driving force behind the net drain on domestic financial resources in most developing countries. They have harmful social impacts, mainly on countries that are too poor to mobilize the revenues needed to finance the provision of essential public goods and services (Ortega *et al.*, 2020).

The current health crisis has evidenced different losses; among them, one finds lack of guarantee of health rights due to years of funds' withdrawal from the public health infrastructure and from the health science and technology system (Ramirez-Valles *et al.*, 2020; Werneck & Carvalho, 2020).

Thus, the social implications of the COVID-19 pandemic express the unjust and unequal access of a large part of the population to food, goods, resources, information, and services. Such implications hinder the promotion of prevention and control measures focused on mitigating the effects of this pandemic.

COVID-19: strategic actions and perspectives to address inequities in environmental health

Not surprisingly, the COVID-19 pandemic appears to most often affect individuals and groups whose identity is associated with marginalized, aggravating racial/ethnic and socioeconomic status, disability, and age- and gender-related disparities (Chenneville *et al.*, 2020).

Literature has shown that gender, social class and race/ethnicity markers are seen as factors of individuals' vulnerability to the exposure to COVID-19 and to its impacts, in the most diverse world scenarios (Chenneville *et al.*, 2020; Estrela *et al.*, 2020; Blundell *et al.*, 2020).

This reality reveals the historical need of implementing strategies to improve populations' living and health conditions, during and after the pandemic, based on the perspective of these social determinants. Therefore, it is necessary adopting socioeconomic policies capable of improving the lives of these individuals by providing greater coverage and by expanding the access to healthcare services and actions, as well as to better education, housing, sanitation, job positions and income (Estrela *et al.*, 2020).

Understanding the pandemic as global disaster requires focusing on important aspects, which means combining different processes, from global to local levels. On the one hand, a model of economic inequality, income concentration and growing population living in poverty, concentrated in the periphery of urban areas, under precarious living conditions, stands out. On the other hand, the weakening of global governance institutions, and of their ability to deal with disasters and pandemics, requires policies and actions agreed upon and coordinated in all public health administrative spheres (Freitas *et al.*, 2020).

Moreover, it is essential addressing inequalities, in the current pandemic context, in terms of health infrastructure available for public and private access. Elements associated with the effectiveness of containment measures, the availability and technical quality of human resources in the health field, and with the availability of personal protective equipment for health professionals, among others, are also essential to enable government's assertive decision making at local or regional level (Sousa Júnior *et al.*, 2020).

According to the World Health Organization (WHO), less than half of the world's population had access to all essential health services in 2018. Global health statistics and indicators have shown that inaccessibility to different information and care types at all healthcare levels remains an important conditioning factor for illnesses and deaths in specific population groups. This finding has evidenced the need of improving and implementing policies focused on prioritizing aspects such as health equity and integrality (WHO, 2018).

An example of this reality lies on the fact that more than a third of children living in low-income countries are too small for their age, and it evidences long-term nutritional deprivation. In addition, according to estimates by WHO (2019), 1 in every 14 born children dies before its fifth birthday.

Although the evidence shows that children are not a COVID-19 risk group, the effects of this disease on pediatric populations can change depending on the country or on the region within different countries. A Brazilian study has shown that, nowadays, socio-geographic differences may affect child morbidity and mortality estimates in Brazil (Martins-Filho *et al.*, 2021).

Such an information shows that social inequalities distributed among geographic regions can influence the impacts of the pandemic on Brazilian children's health. This outcome can be associated with unequal access to comprehensive care and to essential child healthcare services.

Equity applicability in SUS aims at minimizing social inequalities, based on the ground that, although all individuals have the right to health services, they are not equal and, therefore, they have different needs and demands to be met. Consequently, it is necessary developing social public policies aimed at preventing such inequalities, which hinder the implementation of effective health promotion and protection programs (Cobaito & Cobaito, 2020).

Policies focused on promoting equity in Brazil result from the development of social movements aimed at strengthening democracy in the country, as well as from State's efforts to ensure human rights and universal access to goods

and services to vulnerable groups (Siqueira et al., 2017). Thus, equitable access to health services is strongly associated with systems' ability to organize themselves to properly meet the population's needs (Barroset al., 2016).

The exclusion of certain individuals and groups from health resources and services has always been an obstacle to be overcome. Selectivity is based on the strong influence of users' social position on the access to and use of health services. Organizational gaps in the provision of services, resources and health professionals, lack of information, individuals' needs, and socioeconomic and housing profile, and limitations in certain health policies are issues that still deserve a special point of discussion in the health inequity context (Agranonik, 2016; Barros & Souza, 2016).

Despite several advancements observed in the Brazilian health context, some groups still have a hard time to access health diagnosis, treatment and recovery actions and services, mainly at secondary and tertiary healthcare levels (Macinko & Lima-Costa, 2012).

Services should be regulated and their professionals should be trained at different complexity levels. Moreover, services should be mainly adjusted to individuals' demands, mainly to the most vulnerable ones (Barroset al., 2016). Thus, besides identifying and understanding population diversity, the plurality of socioeconomic conditions, religion, gender, sexuality and ethnicity, it is essential developing a set of strategic actions to be implemented through comprehensive care policies focused on these groups (Siqueira et al., 2017).

A strategy adopted to guarantee the expanded use and performance of health services with equity lies on the implementation of healthcare networks, with emphasis on Primary Health Care (PHC), which is the fundamental organization for users to have access to SUS (Barroset al., 2016).

Coping with COVID-19 in the national territory demanded strong PHC organization, which started to play crucial role in the healthcare coordination process. The integration of health surveillance actions to PHC was essential to enable the Ministry of Health to provide rapid response at all healthcare levels and to the health system (Harzheimet al., 2020).

The set of PHC strategies, whether in care, monitoring and investigation of patients with flu syndrome and/or mild COVID-19 symptoms, aims at assisting the Brazilian health system to flatten the pandemic curve, to reduce the need of referrals to hospitals and to provide linear health promotion to the population. Such actions allowed municipalities to adapt themselves to meet moderate and severe cases that required hospitalization and intensive healthcare. (Harzheimet al., 2020).

In fact, given the current scenario, investments in professional qualification and the reinvention of healthcare practices, through digital health, are essential to ensure the humanization and quality of care, i.e., to safeguard equity in care actions for all citizens (Almeida-Filho, 2020).

Thus, technological function and efficiency are fundamental elements to ensure equal population access to health information at the current COVID-19 pandemic time. Popular digital education is a strategic action taken to face this pandemic, based on population's guidance on COVID-19 prevention and control measures and on other official recommendations by health authorities, either through digital or traditional media. Evidence-based information allows individuals to make informed decisions and to adopt health protection behaviors (Opas, 2020c).

It appears that access to the internet through mobile devices has played important role in helping individuals to reach health-related information in the current context (Galindo Neto et al., 2020). According to recent study conducted with participants from Southeastern Brazil, WhatsApp message application was another popular resource used in mobile devices and computers to receive updated information about the COVID-19 pandemic (Santos et al., 2020).

Digital inclusion aims at including the entire population in the access to quality internet services at an affordable cost to enable the public reach to interventions, research and health policies conveyed by information and communication technologies (Opas, 2020d).

Several countries, such as Brazil, have made the greatest effort in the history of public health to transform and expand the registry and healthcare provided within PHC in the 21st century. This effort was based on the use of *TeleSUS* to cope with COVID-19. It is a strategy used to make pre-clinical healthcare services available in order to broaden population's understanding about the disease and about when to seek face-to-face care. *TeleSUS* is a perennial, teleconsultation system, focused on maximizing the access of all Brazilian citizens, including Health professionals, to qualified public health assistance (Harzheim *et al.*, 2020).

Therefore, health communication is an acknowledged example of the dimensions deeply affected by the COVID-19 pandemic. The speed and immediacy of health information exchanges through Internet using have shown the interdependence of global societies on health-related knowledge and forced them to the challenge of having digital accessibility to secure and reliable messages (Santos *et al.*, 2020).

In addition to the virtual environment, environmental sanitation is another important infrastructure service associated with basic human needs and quality of life, since it significantly contributes to populations' resilience in controlling and coping with the COVID-19 pandemic (Souza *et al.*, 2020).

The low coverage of environmental sanitation services in Brazil is a chronic, secular, socio-environmental issue that got worse due to the COVID-19 pandemic. Lack of access to solid waste collection services, sanitary sewage and treated water hinders personal hygiene, the process of cleaning surfaces and homes, and the prevention of contact with areas contaminated with the coronavirus, among other infectious agents (Martins-Filho *et al.*, 2020; Souza *et al.*, 2020).

Thus, inefficient solid waste management in the current COVID-19 pandemic times has hindered the advancement of sustainable, economic and environmental actions, such as suspension of recycling programs in several cities. Therefore, public health has been affected by the degradation of natural resources, decreased drinking water supply (caused by recyclable materials' production loss), and by improperly disposed household (disposable masks and plastic packaging of cleaning products) and hospital waste (Urban & Nakada, 2021).

Another socio-environmental disparity factor is associated with population density and poor housing conditions, which hinder social distancing, among other collective health protection measures. Thus, socio-environmental inequalities are associated with difficulties in complying with COVID-19 prevention measures, as well as with the risk of disease outspreading, case severity and mortality rates in the Brazilian territory (Martins-Filho *et al.*, 2020; Souza *et al.*, 2020).

In terms of socio-environmental relations, it is worth highlighting the premise that COVID-19 may be another emerging disease associated with environmental impacts, habitat reduction, and indiscriminate exploitation of faunal resources. Such a discussion clearly demands understanding the inseparability among human, animal and environmental health, in what has been called One Health, in order to integrate programs and produce multi-sectoral responses to likely risks (Giatti *et al.*, 2020).

This socio-environmental systemic perspective leads to the assumption that this disease may have resulted from a virus that left its ecosystem, facilitated by intrinsic social interactions among humans searching for resources and food items (Giatti *et al.*, 2020).

The valorization of health promotion strategies must involve collective social engagement and participation movements to safeguard the co-responsibility of all social and political actors in the preservation and maintenance of good environmental quality to the detriment of private interests in investing in technologies and in productive activities with high impact on humans' environment, health and quality of life in order to generate wealth and benefits for some elites (Moniz *et al.*, 2016).

Based on this line of thought, the United Nation's Sustainable Development Goals (SDGs) were set, in 2015, as action plan for societies, for the planet and for a prosperous future. It is an agenda of actions to be implemented until 2030, based on

17 objectives and 169 goals built in the legacy of the Millennium Development Goals (MDGs). SDGs are integrated and indivisible, and they balance all three sustainable development dimensions, namely: economic, social, and environmental (Opas, 2020e).

According to the latest data published by WHO in the 2020 world statistics report, there has been remarkable progress in several important indicators, such as reduced maternal, neonatal and child mortality rates since 2000, although there is still a long way to go in order to meet the SDGs (Who, 2020).

The desire to achieve the SDG and MDG by planning and implementing public policies will only be viable if the environmental health-equity principles are revised. The pandemic can be an opportunity to make the fight against inequalities and inequities in environmental health visible to the core of debates about territorial planning and priority public policy agenda (Travassos *et al.*, 2020).

There must be permanent research agenda for public health emergencies of international importance, which takes into consideration the evolution of specific diseases and the investigation of social, environmental, economic and political causes of epidemics and pandemics, as well as the impact of crises on individuals' health (Ventura *et al.*, 2020).

It is essential strengthening and broadening social and environmental protection systems; promoting redistributive policies aimed at mitigating the negative impacts of crises, disasters and public health emergencies on population's well-being and quality of life; and taking measures to promote social inclusion and full health rights (Abramo *et al.*, 2020).

4. Conclusion

It is possible concluding that the multidimensionality of the pandemic crisis must be understood based on the socio-environmental systemic perspective, with emphasis on its potential to worsen pre-existing environmental health inequities and to produce new inequities in the future in regions and populations affected by health and environmental vulnerability if contemporary society does not make structural, attitudinal and political changes.

Further studies are suggested on the investigation of the inequities in health environmental in the current context of post-pandemic transition, as well as on the use of measures to reduce such inequities from the perspective of planetary health and local health and environmental needs.

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