

Urbanization: socio-spatial movements and the emergence of schistosomiasis: reflections on society

Urbanização: movimentos socioespaciais e o surgimento da esquistossomose: reflexões sobre a sociedade

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Abstract

The hygiene of spaces and the search for a healthier life, led researchers to consider the relationship between health, environment, and socio-spatial movements for the proliferation of diseases such as schistosomiasis. The migration of people from one place to another can occur for several reasons, such as the search for better job opportunities, access to health and education services. However, these population movements can impact the geographical distribution of diseases. The scenario of waterborne diseases, due to lack of basic sanitation and migrations, it has been a concern of society and environmental agencies, as they can influence the occurrence of schistosomiasis. This research sought to relate urbanization, socio-spatial movements, sanitation and the emergence of schistosomiasis, a topic that involves social, environmental and public health factors, therefore, the theme needs to be discussed. Bibliographic searches were carried out, using sources such as FIOCRUZ, IBGE, Brazilian Institute of Geography and Statistics. It is concluded that urban expansion in Brazilian cities, mainly in the North of Minas Gerais in recent decades, the arrival of migrants, the lack of public policies regarding basic sanitation



<https://doi.org/10.28998/contegeo.11i.25.19291>

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Submetido em: 07/03/2025

Aceito em: 09/12/2025

Publicado: 13/04/2026

e-Location: 19291

infrastructure, ratified the need for attention to problems related to public health, justifying the importance of the article.

Keywords: Space hygiene, Urbanization, Schistosomiasis, Geographic distribution of diseases, Socio-spatial movements.

Resumo

A higiene dos espaços e a busca por uma vida mais saudável, levaram os pesquisadores a considerarem a relação entre saúde, meio ambiente, e os movimentos socioespaciais para a proliferação de doenças como a esquistossomose. As migrações de pessoas de um lugar para outro, podem ocorrer por vários motivos, como busca por melhores oportunidades de trabalho, acesso a serviços de saúde e educação. No entanto, esses movimentos populacionais podem impactar na distribuição geográfica das doenças. O cenário de doenças de veiculação hídricas, devido à falta de saneamento básico e migrações tem sido uma preocupação da sociedade e órgãos ambientais, pois, podem influenciar na ocorrência da esquistossomose. Esse trabalho buscou relacionar urbanização, movimentos socioespaciais, saneamento e o surgimento da esquistossomose um tópico que envolve fatores sociais, ambientais e de saúde pública, portanto, necessário que o tema seja levantado. Foram realizadas pesquisas bibliográficas, utilizando fontes como a FIOCRUZ, IBGE, Instituto Brasileiro de Geografia e Estatísticas. Conclui-se que a expansão urbana nas cidades brasileiras, principalmente Norte de Minas nas últimas décadas, a chegada de migrantes, a falta de políticas públicas quanto à infraestrutura de saneamento básico, ratificou a necessidade de uma atenção aos problemas relacionados à saúde pública justificando a importância do artigo.

Palavras-chave: *Higiene dos espaços, Urbanização, Esquistossomose, Distribuição geográfica das doenças, Movimentos socioespaciais*

INTRODUÇÃO

The concern with diseases, the hygiene of spaces and the search for a healthier life, led philosophers, thinkers and researchers for centuries to seek the relationship between health, environment and socio-spatial movements, since the environment of cities was and continues to be the focus of illnesses due to migration, the flow of people moving within a city, between cities or between rural and urban areas, families who end up exposing themselves to various forms of weaknesses in the search for a place to settle. (ZIMMERMAN et al., 2011). Furthermore, as more people move to cities and urban areas expand, several factors can influence the prevalence and spread of diseases.

In the State of Minas Gerais, more specifically in the North of Minas Gerais, schistosomiasis has effectively become a concern for Public Health entities decades ago. Since the old governments of Minas Gerais, public policies in the social area have been considered to control the endemic disease. (MARTINS et al., 1982; RCEMG,

1983) Consequently, in the following decades, the implementation of primary health care began through integrated actions between local, regional, and community powers, to propose actions to combat and supervise the problem.

Human migrations throughout history have played an important role in the dissemination of diseases. During Brazil's colonial period, the movement of different populations — including enslaved Africans, Indigenous peoples, and European colonizers — contributed to the introduction and circulation of various infectious diseases, such as smallpox, tuberculosis, syphilis, and leprosy (BARRETTO, 1967). Other researchers also point to the lack of arguments or evidence that indicates the non-existence of schistosomiasis in America even before the arrival of enslaved Africans. However, questions about the origin of schistosomiasis in Brazil remain partially open and raise other questions, as is the case in this research.

From this perspective, considering that people move from one region to another, they can take with them pathogenic agents, such as viruses, bacteria, and parasites, which can be transmitted to populations that do not have prior immunity to these illnesses.

Driven by the capitalist economy, an urban acceleration was experienced, as well as the search for jobs and better living conditions, and a rural exodus occurred and still occurs, with people from other realities carrying diseases with them.

This is because different regions may have various levels of exposure and adaptation to certain diseases. Therefore, human migrations have a complex relationship with illness. Many workers, increasing the urban fabric, workers in precarious living and working conditions and the great need to create social policies aimed at improvements in the field of hygiene, health, and housing (LIMA e PINTO, 2003; FONSECA, 2007). While migration can contribute to the spread of pathologies, it is also important to note that populations in flow often face greater health vulnerability due to the conditions in which they live and the lack of access to health services and basic sanitation.

For greater control and knowledge of diseases carried by people, geographic science has become a great ally to the health area, especially when it comes to mapping disease outbreaks.

The first research on Geography in health came from cartographic studies by some significant authors in the area, such as Castro (1984), Lacaz (1972), Pessoa (1960), and the professor and doctor Osvaldo Paulo Forayttini, who in 1967 conquered the chair in epidemiology. This contact resulted in the first atlases in the health area

and mainly productions focused on environmental sanitation in typically tropical regions to map areas of disease proliferation. Today, it is possible to map the occurrence of endemic diseases and act directly in the places where they occur, increasing the chances of success in preventing and advancing them. (ROSA, 2005).

In this sense, the city and its geographic space is seen by scientists as a place of amplitude and totality where the occurrence of diseases is susceptible due to these movements of people, a product of social relations. (SANTOS, 1997). Agreeing with this idea, Leavell and Clarck (1976) state that geographic space repels or attracts illnesses, facilitates, or hinders the relationship between the (individual, host, etiological agent and recipient of infection). In other words, space is the geographic place that predisposes the occurrence of diseases. (MACMAHON e PUGH, 1978) The dynamics of cities and the flow of people can contribute to the circulation of agents that will make the disease cycle complete or not. The individual, once considered a passive subject shaped by the environment, is now understood as an active agent who interacts with and transforms it. The relationship between person and environment is therefore dynamic and mutually influential (MORAES, 1997).

It is possible to see that this concern comes from a long time ago, and it has been studied since the development of medical thought, from the Egyptians to ancient Greece. Ancient reports from Mesopotamia (SCLIAR, 2007) and parts of biblical texts highlight how, in the Egypt of the pharaohs, society had advanced medical practices to treat diseases and isolate infected people. The practical sense and observation guided the healers, since at that time there was no concept of illness. Only at the end of the 18th century and beginning of the 19th century did “disease” begin to be understood as something out of balance with vital forces. According to this view, only by recovering balance could health be restored.

The health and disease process are therefore involved in a multifaceted dynamic that encompasses sociocultural, psychological, environmental, and political dimensions, among others. Identifying this process acting and interacting in individuals or society is complex. The author Castelhana (1990) states that, from an analytical point of view, it is seen as an effort to operationalize the health-disease process, since there are various levels of organization of life.

Today, from a geographical perspective, mainly in the space category, research in health has been gaining new allies in the search for healthy territory by analyzing

and mapping the process of producing space as a social determinant and the association of the spread of certain diseases, making it possible to identify areas suitable for the proliferation of disease vectors such as schistosomiasis. Since it was identified in Brazil, schistosomiasis was among the diseases that affected the population since its discovery in Brazil and is included in the large group of diseases called rural endemics. (HOCHMAN, 2006).

Just like the studies of Chagas disease and its relationship with the ways of occupying and transforming space, schistosomiasis presents itself as a disease that has a direct relationship with social issues, displacement of people and the poverty of the individual's living environment.

Poverty, misery, hunger and malnutrition, unhealthy conditions, hopelessness, sadness, violence, air, water, and land pollution, as well as many other evils define spaces that are permanently constructed and reconfigured, just as opposing processes and states define particular spaces. (INIGUEZ ROJAS, 1998).

Studies that seek to understand the occurrence of diseases have increasingly aroused the interest of scholars in the participation of Brazilian migrants in the increase of the rate of schistosomiasis spaces, in which space is understood as a category of geographic analysis, in the search for understanding the occurrence of diseases and their disposition precedes epidemiology as a science. Only in the 1930s did Geography approach epidemiology, when the concept of space, understood as place, was borrowed from Geography with the goal of establishing, for analysis and, isolated from time and people, it came to be understood also as the geographic place that various pathologies, their causal networks. In this way, the concept of space has become the main element that predisposes the occurrence of diseases. (MAC MAHON e PUGH, 1978; CZERESNIA, 2000).

In Brazil, within the history of the origin of the disease, it is believed that slaves were in fact responsible for the introduction of schistosomiasis in Brazil. (RIBEIRO et al., 2004). However, it is important to note that the transmission of the disease is not directly caused by the enslaved, but rather by the conditions in which they lived and the characteristics of the parasite and its intermediate hosts, such as freshwater snails.

At that time, due to the resistance of Black people to slavery, escapes began and thus the first socio-spatial movements also began to emerge. The displacement of slaves ended up taking schistosomiasis to other regions within the country.

The occupation of spaces related to the emergence of diseases led to the emergence of public health due to diseases linked to the environment and poor living conditions. Thus, the miasmatic theory led, in the 19th century, to the improvement of the urban environment in the developed world. (ROSEN, 1994).

In this sense, since the 19th century, sanitary improvements have managed to control the threat of diseases in Brazil with hygienist policy preventing the proliferation of contagious diseases as far as possible. Caldeira (2003) explains that in this way, control was exercised over poverty as a symptom of a disease associated with disorder and dirt.

The diseases that spread throughout the city, from an ideological point of view, would be concentrated in poverty-stricken areas. [...] The urban and capitalist expansion of the late 19th century brought the emergence of the notion of profitability, effectiveness Sociologies, of work in all domains, including indoor space, highlighting the importance of cleanliness and hygiene for health and family well-being [...]. (MATOS, 1996).

At the end of the 19th century and beginning of the 20th century, with increasing industrialization, cities experienced a large population increase and a greater concentration of poverty. Even with some measures to control the spread of diseases and pollution, the problems never disappeared. At that time, health services understood the relationship between space, urbanization, migration, and their connection with diseases. The urban way of life marks this new stage, which includes different health concerns.

In the 1970s, a new strand of research on diseases emerged, due to the movement of critical renewal within Epidemiology, through researches such as that of Laurell (1983), Breilh (1991), Melo-Filho (1996), Almeida Filho (1989), among others, as new habits and rapid globalization began to take over the world, and research in the field of diseases began to delve into the category of space and territory in public health research. The works of geographer Milton Santos will also enable Epidemiology to think about this category as a social relationship, thus allowing us to think about the disease as a process of changing the spatial structure, not merely describing it. (SILVA, 1985a).

The objective of this article is to seek relationships between migration and basic sanitation to understand the aspects that favor the manifestation of schistosomiasis, a waterborne disease. Just like the studies of Chagas disease and its relationship with the ways of occupying and transforming space, schistosomiasis presents itself as a

disease that has a direct relationship with social and economic issues in the individual's living environment. Bibliographic and cartographic research was carried out on the topic in question, with sources such as the Osvaldo Cruz Foundation (FIOCRUZ) and the Brazilian Institute of Geography and Statistics (IBGE).

DEVELOPMENT

The occurrence of *Schistosoma mansoni* is common in Africa, Central America, India, the Antilles, and Brazil, where the disease is known as intestinal or mansoni schistosomiasis, due to the location of the parasites in the venules of the wall of the large intestine. Its geographic distribution is due to the location of some species of freshwater mollusks, of the genus *Biomphalaria*, which live in ditches, irrigation canals, tanks, dams, stagnant water with vegetation, banks of rivers and lakes, and adapt better to conditions of temperature between 20°C and 28°C (DELMONDES, 2014).

Within the history of the origin of the disease, it is believed that human groups originating from the coast of Guinea, Angola, the former Congo, in West Africa, and Mozambique, in the eastern part of the African continent, were brought to Brazil and forced to work as enslaved people. Historical records suggest that the introduction of schistosomiasis in the country occurred during this period, associated with the inhumane living and sanitary conditions imposed by the colonial slave system. Initially, these people constituted the predominant workforce in the sugarcane production areas of northeastern Brazil, regions where environmental conditions favored the continuation of the parasite cycle.

According to Junqueira (2009, p. 58):

It is worth highlighting that the very characterization of certain diseases as tropical is the result of a Eurocentric and imperialist perspective, since diseases considered tropical were introduced precisely by the colonizer, either with the arrival of Portuguese and Spanish explorers or by slave labor introduced into the colonies. This period was characterized by descriptive studies based on the theories of Ratzel and La Blache, whose focus was on climate as one of the main factors responsible for the occurrence of diseases in the new lands.

Schistosomiasis is a parasitic disease, with a chronic evolution, whose magnitude of prevalence, severity of clinical forms and evolution characterize it as an important public health problem in the country (BRASIL, 2019). The infection is prevalent in tropical and

subtropical areas, in poor communities without drinking potable water and adequate sanitation or leisure facilities, a disease of poverty that leads to chronic health problems. Currently, the disease is considered endemic in more than 78 countries, affecting almost 240 million people worldwide and more than 700 million living in endemic areas (MINISTRY OF HEALTH, 2014).

In Brazil, it is estimated that the disease affects up to 1.5 million people in 19 states, and that the highest incidence of the disease is found in the Northeast region and the state of Minas Gerais.

With the rapid expansion of cities, a large number of people became concentrated in large centers, people in search of better living and working conditions. This impacts any space on the planet and consequently the emergence of new diseases and the return of old epidemics became inevitable. New habits and rapid globalization began to take over the world.

The individualized study of determining factors in health and their consequences, previously reductionist, cannot ignore the relationships of interdependence that exist between the individual and the physical, social, and political environment in which he lives and operates. (CAIAFFA et al., 2008).

In this sense, research in the field of diseases began to delve deeper into the space and territory category in public health research. (FARIA e BORTOLOZZI, 2009). This is because, together, population growth and technological development led to a change in the character of urban diseases and the emergence of new diseases such as the Human Immunodeficiency Virus (AIDS), for example, motivated a more effective search to understand the diseases as collective manifestations in a globalized world.

Environmental issues at a global level have become more than ever the topic of the day at G20 meetings, in debates between environmentalists, environmental protection Non-Governmental Organizations (NGOs), etc. These entities not only debate environmental issues, but also sociocultural aspects, activating public entities to create and ratify international treaties on environmental issues, to change public international law in force, as well as its application, and are relevant to the new directions of International Relations.

The planet has been feeling the impacts of the occupation of space due to accelerated urbanization, often disorderly, without respecting ecological preservation areas, and large emissions of polluting gases. In this context, the ease of coming and going in the constant flow of people crossing the borders from one continent to another both brings and

carries diseases. The era of globalization of nature and health due to the configuration of a networked world according to Castells (1995) generates this profusion of unprecedented flows that we are experiencing in the contemporary world.

Due to the rural exodus, the growing urbanization of cities often generates a disorderly population growth, which ends up leading to the emergence of slums in unhealthy areas, presenting themselves as places where people are more crowded due to little space and consequently the emergence of various diseases. Milton Santos explains in his approach to Landscape and Production that:

The relationship between landscape and production is present in each productive form and requires a type of work instrument [...], the landscape is organized according to these instruments [...], each instrument has its specific location that follows the logic of production, so the space is used in a disorderly way. The landscape is not created all at once, but in addition [...] it is an inheritance from different moments. Hence the anarchy of capitalist cities. (SANTOS, 1988, p. 72).

Brazil follows this global trend in urban growth that began way back in the migratory movements that are related to the different economic cycles throughout its history until today, and until the middle of the 20th century, it depended on external migratory waves such as the cycles of sugar (16th and 17th centuries) and gold (18th century). Slave labor coming mostly from Africa and, later, the coffee cycle from 1850 to 1950 with the labor of immigrants, in the meantime from 1900 to 1920 rubber cycles in Amazonas also using mainly the labor of northeasterners and foreigners. After 1950, Brazil, when consolidating the construction of its capital in Brasília, also expanded its agricultural borders, which promoted a large internal immigration.

In Brazil, we can see that urban expansion was caused by many factors such as structural transformations in the economy and society, mainly driven by the industrialization of the economy that took place after President Juscelino Kubitschek's Plan of Goals (1950-1960) and extended until the end of the 70s, as well as internal migrations such as the rural exodus, caused major social changes.

Not only did the country's capitals grow, but many cities in the interior of the country became a focus of attraction for workers from all over the world. Cities and their new urbanized areas brought enormous growth in the number of private homes, which went from 13.5 million in 1960 to 44.8 million in 2000 (IBGE, 2019). However, these new homes required infrastructure and basic sanitation services that often did not occur effectively.

According to IBGE (2011), in 2010, there were, in the country, 6,326 subnormal agglomerations known as favelas, invasions, caves, lowlands, communities, villages, ressacas, mocambos and stilts, among others, with 3.2 million homes.

Areas characterized by precarious infrastructure and limited access to public services are often more exposed to epidemics and infectious diseases. This vulnerability is not inherent to poverty itself but results from the lack of adequate sanitation, health care, and urban planning policies. These conditions make such areas relevant for studying the distribution and determinants of diseases in human populations, including schistosomiasis, in accordance with the concept of Leavell and Clark (1976), for whom the environment is perceived as a container that facilitates or does not facilitate contact between people, or hosts, and etiological agents, also known as pathogenic agents, an organism that produces infection or infectious diseases in hosts in favorable conditions.

Bacteria, protozoa, fungi, helminth viruses and some arthropods are examples of pathogenic agents. The disease would result from an imbalance in the self-regulations existing in the system. However, according to Palmeira et al. (2004, p. 38), "Human beings socially produce their lives in a historical time and therefore, in certain periods, different diseases can occur with different intensities and manifestations".

It is known that urbanization has enabled development in several areas, transformed and affected all places, some positively, others negatively, and in this sense, many cities are still not prepared to meet the basic demands, especially of migrants who arrive looking for work and housing. The consequence of this is crime, unemployment, slumification, water and air pollution, and diseases. In this sense, there is a very large number of economic, social and mainly environmental problems connected in these urban centers that are decisive for the health conditions of populations, especially the neediest.

Therefore, the analysis of geographic space for epidemiology is important. The study of the geographical distribution of the disease analyzes the health-disease process in human communities, observing the distribution and determining factors of illnesses. Space is understood separated from time and people, as the geographic place that predisposes the occurrence of diseases. In the context of Leavell and Clark's (1976) classic ecological triad, the environment is perceived as a container that facilitates or does not facilitate contact between people, or hosts, and etiological agents. Epidemiology, especially nowadays, with the emergence of new viruses, often fatal, offers a better understanding of the environment and its importance for the survival of the human species, as it is concerned with the

occurrence of diseases and its distribution, “the point of view that interests it will be the disease, or set of diseases to be investigated” (SILVA, 1985b, 1986). Especially zoonosis that transcend their natural environment and are incorporated into human society, such as schistosomiasis.

The health theme related to the environment has become the subject of many discussions and disciplines since the 1970s, more precisely in 1972, the date of the first United Nations (UN) conference on the environment and has permeated disciplines not only in health area, but other sciences such as environmental sciences that combine biology, physics and seek to find solutions to environmental problems.

In the topics discussed by the UN in 1972 on environmental preservation, we can highlight some expressed principles:

- a) The survival of the planet in question. Therefore, all countries are affected without distinction. The responsibility to protect the planet for future generations therefore belongs to everyone, maintaining respect for equity as a principle of fundamental justice in distributing the burden of changing the course of development towards environmental protection;
- b) human beings occupy the center of concerns – which places human health at the center of concerns linked to the environment and development;
- c) sustainable development aims to guarantee the right to a healthy and productive life in harmony with nature for present and future generations (BRASIL, 2002, p. 9).

From this perspective, the concern with the geographic environment and its relationship with the health of the population is not new. As Palácios et al. (2004) points out, in recent decades, due to the return of concern with the geographic environment, studies have been growing within this area of environmental preservation and impacts on society.

In Brazil, despite the growth of cities resulting from this rapid development, basic sanitation infrastructure is precarious in many cities in the country, as it occurred punctually, with the 1970s and 1980s being the period in which the country most sought to invest in basic sanitation, as sewage treatment and garbage collection (LEONETI et al., 2011). However, this did not occur equally across the country, with cities in the interior being less privileged with this service and, therefore, more prone to the proliferation of diseases, especially water-borne diseases such as schistosomiasis.

According to the National Water Agency (ANA, 2019), basic sanitation comprises water supply services; sewage collection and treatment; urban cleaning, garbage collection and disposal; and drainage and rainwater management. In this context, basic sanitation is

considered an essential criterion for a country to be considered developed and aims, through a set of measures, to take care of the preservation of the geographic environment to mitigate diseases, promote health, quality of life, well-being and increase the productivity of the population. The absence of this service and the lack of care for the population's personal hygiene is a risk factor for public health that can generate many pathologies such as diarrhea, hepatitis, dengue fever, yellow fever, leishmaniasis, malaria, Chagas disease, schistosomiasis, leptospirosis, cholera, among many others that may emerge or resurface in the country, seriously impacting society. (FRANCEYS et al., 1994; WHO, 2017).

The impact of schistosomiasis is relevant both at a social and economic level, and it is necessary to adopt effective measures that seek to eradicate or at least minimize this situation, applying appropriate methods for the prevention and control of these diseases. Only with good basic sanitation can this issue be possible.

FINAL CONSIDERATIONSS

Given the above, the health of a population is directly linked to the relationship it establishes with its environment. In view of this, the relationship between health and the environment, in all its magnitude, must be the object of attention, especially in the development of health policies and new solutions to the problem. The current condition of basic sanitation worldwide, especially in developing countries, remains far from ideal, and in Brazil the situation is even more critical in smaller cities in the Northeast and in the North of Minas Gerais.

It is estimated that 2.4 billion people in the world live without basic water treatment and sewage collection services, which leads to the emergence of diseases resulting from the lack of or an inadequate sanitation system, particularly in poor and vulnerable areas, and if nothing is done, the epidemiological situation will only worsen in the country.

In this sense, the population of underdeveloped countries is much more vulnerable and exposed to environmental risks such as precarious sanitary conditions. The indicators reveal an obvious failure in terms of basic sanitation numbers, contributing to the increase in cases of waterborne diseases that generate a social impact for the population that lives daily on the margins of an infrastructure that can minimally serve them.

The consequence is the emergence of illnesses because of zoonosis that are closely related to the environment in which a population lives and the way it interacts with this environment, most of which are without adequate sanitation structures.

In general, the environmental problems caused by development affect everyone, not only the poorest classes, but unhealthy conditions directly affect poor populations due to the lack of structure in the location where they live. One concludes that the urban expansion of cities in recent decades, the arrival of migrants, the lack of public policies regarding basic sanitation infrastructure, and economic and social development ratified the need for attention to problems related to public health, justifying the importance of research.

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