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Social housing and the principles of a healthy city

Prof. Dra. Ana Maria Girotti Sperandio
Professor Doutor, UNICAMP, Brasil
amgspera@fec.unicamp.br
ORCID iD 0000-0002-9373-7727

Ana Carolina Rodrigues
Mestranda, UNICAMP, Brasil
a289938@dac.unicamp.br
ORCID iD 0009-0002-4200-5945

Lara Vilela Vitarelli
Doutoranda, UNICAMP, Brasil
l260095@dac.unicamp.br
ORCID iD 0000-0002-1087-8509

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A habitação de interesse social e os princípios da cidade saudável

RESUMO

Objetivo – Avaliar de que forma o Conjunto Habitacional Nelson Mandela (Campinas, Brasil) — composto por moradias mínimas de 15 m² — se articula com os princípios da cidade saudável e das agendas de promoção da saúde urbana.

Metodologia – Revisão documental e bibliográfica combinada a relato de experiência em campo. A "Mandala Conceitual Sperandio" foi utilizada como referencial analítico para avaliar o desenho das unidades e do entorno imediato por meio dos elementos imateriais de uma cidade saudável.

Originalidade/Relevância – O estudo avança nos debates sobre habitação social no Brasil ao operacionalizar um referencial holístico centrado na saúde em um caso real marcado por tipologias de micro-habitação e reassentamento pós-despejo, evidenciando lacunas na governança intersetorial e na participação social.

Resultados – Embora o conjunto tenha regularizado a posse e oferecido redes básicas, a tipologia negligencia determinantes fundamentais de saúde: restrita privacidade, ventilação cruzada insuficiente e pé-direito que inviabiliza ampliações seguras. A assistência técnica prometida para ampliações não foi disponibilizada, levando à autoconstrução precária. O entorno urbano apresenta baixa arborização e conectividade limitada, apesar de alguma oferta de transporte público e equipamentos sociais. No geral, as unidades de 15 m² estão aquém da habitabilidade mínima para famílias diversas e muitas vezes numerosas, reforçando desigualdades urbanas em vez de promover saúde.

Contribuições Teóricas/Metodológicas – Evidencia a aplicabilidade do "Mandala Conceitual Sperandio" para integrar planejamento urbano e promoção da saúde, conectando a avaliação local de habitação às orientações da OMS/OPAS/ONU-Habitat em uma abordagem avaliativa transferível.

Contribuições Sociais e Ambientais – Indica a necessidade de políticas habitacionais integradas que aliem conforto ambiental (ventilação, iluminação natural, desempenho térmico) à provisão de infraestrutura, participação comunitária e governança intersetorial, de modo a assegurar bem-estar e equidade na produção habitacional social.

PALAVRAS-CHAVE: Moradia. Planejamento urbano. Cidades Saudáveis. Participação social

Social housing and the principles of a healthy city

ABSTRACT

Objective – To assess how the Nelson Mandela Social Housing project (Campinas, Brazil)—composed of 15 m² minimal dwellings—aligns with healthy city principles and urban health promotion agendas.

Methodology – Documentary and literature review combined with a field-based experience report. The "Mandala Conceitual Sperandio" was applied as the analytic framework to appraise dwelling design and immediate surroundings through the intangible elements of a healthy city.

Originality/Relevance – The study advances debates on Brazilian social housing by operationalising a holistic, health-centred framework in a real-world case marked by micro-dwelling typologies and post-eviction resettlement, foregrounding intersectoral governance and social participation gaps.

Results – While the scheme regularised tenure and provided basic infrastructure networks, the typology neglects key health determinants: limited privacy, inadequate cross-ventilation, and ceiling heights that hinder safe expansion. The promised technical assistance for enlargement was not delivered, prompting precarious self-construction. Urban context weaknesses include sparse tree cover and limited connectivity, despite some public transport and social facilities nearby. Overall, the 15 m² units fall short of minimum habitability for diverse, often large, households, reinforcing urban inequalities rather than advancing health promotion.

Theoretical/Methodological Contributions – Demonstrates the utility of the "Mandala Conceitual Sperandio" for integrating urban planning and health promotion, linking local housing assessment to WHO/PAHO/UN-Habitat guidance in a transferable evaluative approach.

Social and Environmental Contributions – Points to the need for integrated housing policies that couple environmental comfort (airflow, daylight, thermal performance) with infrastructure provision, community participation and intersectoral governance, to safeguard wellbeing and equity in social housing delivery.

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KEYWORDS: Housing. Urban planning. Healthy cities. Social participation.

La vivienda social y los principios de una ciudad saludable

RESUMEN

Objetivo – Evaluar cómo el Conjunto Habitacional Nelson Mandela (Campinas, Brasil) — compuesto por viviendas mínimas de 15 m²— se relaciona con los principios de la ciudad saludable y con las agendas de promoción de la salud urbana.

Metodología – Revisión documental y bibliográfica combinada con relato de experiencia en campo. El "Mandala Conceptual Sperandio" se empleó como marco analítico para examinar el diseño de las viviendas y su entorno inmediato a través de los elementos intangibles de una ciudad saludable.

Originalidad/Relevancia – El estudio avanza en los debates sobre vivienda social en Brasil al operacionalizar un marco holístico centrado en la salud en un caso real caracterizado por tipologías de microvivienda y reasentamiento tras desalojos, poniendo en evidencia carencias en la gobernanza intersectorial y en la participación social.

Resultados – Si bien el conjunto garantizó la tenencia y proveyó redes básicas, la tipología descuida determinantes esenciales de la salud: escasa privacidad, ventilación cruzada insuficiente y altura interior que impide ampliaciones seguras. La asistencia técnica prometida para ampliaciones no fue implementada, dando lugar a procesos precarios de autoconstrucción. El entorno urbano presenta baja cobertura arbórea y limitada conectividad, a pesar de cierta oferta de transporte público y equipamientos sociales. En general, las viviendas de 15 m² no alcanzan los estándares mínimos de habitabilidad para familias diversas y, a menudo, numerosas, reforzando desigualdades urbanas en lugar de promover la salud.

Aportes Teóricos/Metodológicos – Demuestra la utilidad del "Mandala Conceptual Sperandio" para integrar la planificación urbana y la promoción de la salud, vinculando la evaluación habitacional local con las directrices de la OMS/OPS/ONU-Habitat en un enfoque evaluativo transferible.

Aportes Sociales y Ambientales – Señala la necesidad de políticas de vivienda integradas que combinen confort ambiental (ventilación, iluminación natural, desempeño térmico) con provisión de infraestructura, participación comunitaria y gobernanza intersectorial, para garantizar bienestar y equidad en la producción de vivienda social.

PALABRAS CLAVE: Viviendas. Planificación urbana. Ciudades Saludables. Participación social.

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1 INTRODUÇÃO

The understanding of a healthy city based on health promotion rather than disease control is a long process that has been built on various actions, policies, and debates in the field of medicine and related areas. In this context, one of the first moments of health promotion as a broad public policy can be understood as the discussions raised by the social welfare policy promoted by the British Labour Party between the 1940s and 1950s, especially with the creation of the National Health Service (NHS) in 1948 (Amadeo *et al.*, 2021). The notion of the state as a central agent in health promotion, especially in the coordination of public-private actions, its milestone was the structuring of this universal health system. However, it was only in 1986, with the Ottawa Charter, that the discussion on health promotion gained prominence (Heidmann *et al.*, 2006).

The first International Conference on Health Promotion, held in Ottawa in 1986, was a key starting point for other actions around the world that place health promotion at the center of the health discussion. The document presents five key action areas for health promotion, focusing on the importance of intersectoral actions for the effectiveness of actions. The Charter defines health as a positive concept, beyond the notions of disease or disability, linked to social and personal resources, understanding healthy living as something collective and connected to global well-being, not just an individual lifestyle (International Conference on Health Promotion, 1986).

1.1 Health promotion in Brazil

The Brazilian Federal Constitution of 1988 includes, between articles 196 and 200, the chapter on Social Security, consisting of the subsystems of Health, Social Security, and Social Assistance. This was a first step toward the implementation of intersectoral actions in the management of public actions and policies (Brazil, 1988). Before 1988, health services were only guaranteed to Social Security members and were not a universal right. With the enactment of the new Constitution, health became a duty of the State, regardless of contribution (Brazil, 1988). Health is regulated by Law No. 8080 of 1990, which created the Unified Health System (SUS). The SUS organizes various actions that bring together different public and private sectors to promote health (Brazil, 1990). However, it is still possible to observe, in the text of the law, a fragmented understanding of health, which, despite considering several points raised by the Ottawa Charter, still focuses on diseases as the central point for health.

It was in 2006, with the establishment of the National Health Promotion Policy (PNPS) through Ordinance MS/GM No. 687, that the understanding of health expanded within the Brazilian public administration. Based on a broader concept of health, the Policy focuses on coordinated and intersectoral actions to promote health collectively. It is a set of strategies and actions that aim to promote health comprehensively, understood not only as the absence of disease (Brazil, 2006). The PNPS, in general terms, represents an expansion not only of the notion of health, but also of the responsibilities to be shared among different entities, due to how it was formulated. The development of this policy was the result of debate among all areas of the Ministry of Health, universities, local SUS administrations, and various social actors (Castro

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et al., 2010). This collective effort resulted in a cross-cutting policy, creating a network between the government, private initiative, and society committed to the health of the population. It is possible to see, then, an effort to integrate health policies, both within and outside the Ministry of Health, with a view to broadening the concept and strengthening the participation of various agents and their local and regional activities.

1.2 Healthy cities and social housing

Once a broader sense of health is incorporated, it is necessary to develop concepts for health promotion in a wide range of fields. When considering architecture and urban planning, much can be done to move toward a city that promotes the health of its population. A healthy city reflects, in its planning, management, and actions, the principles of health promotion beyond specific actions such as the creation of spaces for outdoor sports, but incorporates as a principle the listening to various agents and the promotion of equity in all spheres of public life.

According to Leeuw *et al*. (2015), the healthy city functions as a comprehensive heading that brings together a whole range of stakeholders under a set of objectives. To establish a common direction for different sectors, Hancock and Duhl (1988) suggested eleven objectives for a healthy city, which broadly cover the scope of health and the multiple urban systems on which humans depend. According to Sperandio *et al*. (p.13, 2023), a healthy space a place to be constantly woven, considers the sum of the urban and rural, one that, through participatory, intersectoral, intersectional, inclusive, and supportive public management, reflects on the paths to collective happiness, thus enabling people to develop, evaluate, and value participatory spaces for the governance of the common good.

As a focus of this work, we consider the promotion of a healthy city based on architecture, with an emphasis on Social Housing. To this end, it is necessary to understand a brief history of the debate on housing, in light of the history and transformation of the concept of health. In 1976, Vancouver hosted the Habitat I Conference, which focused on urban planning centered on the right to housing. In this context, with the enactment of the Brazilian Federal Constitution, Articles 182 and 183 established the Urban Development Policy. This policy highlights the Master Plan as a regulatory instrument for urban planning in cities, which should be guided by the social function of all occupied urban land (Brazil, 1988). This concept of the social function of property is fundamental for the future development of Social Housing (HIS) policies in the country. This movement is reinforced by the City Statute, under Law 10,257 of July 10, 2001, which lists instruments to guarantee the social function of property in municipalities.

In the global context, two other Habitat Conferences were held, in Istanbul in 1996 and in Quito in 2016. The first focused on aligning urbanism with Agenda 21, proposing the notion of universal access to housing, health services, and education, with a view to eradicating global poverty. The Quito agenda resulted in the alignment of the Habitat Agenda with the environmental agenda, proposing to integrate the city with the natural environment, outlining policies for equal access to clean infrastructure, and warning of the risks of a climate

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catastrophe. The global outlook points to a trend toward aligning health promotion guidelines with those guaranteeing universal access to housing.

The establishment of a "minimum" area for housing is derived from a series of indices. However, the analysis of numerical variables can sometimes distort the real needs of space, and very often does not consider the need for privacy, for example (Folz and Martucci, 2007). The 1978 Health Code, the studies by Silva (1982) and Boueri (1989), in addition to the recommendation by the São Paulo State Institute for Technological Research (IPT) in 1988, reveal a discrepancy, between these recommendations and the current legislation of the State of São Paulo, which continues to define 28 m² as the minimum area for housing.

According to a survey by Folz and Martucci (2007), Brazilian housing programs present plans that vary, for two-bedroom units, from 33 m² to 56 m², offering different levels of environmental quality, finishes, and, in the case of single-family units, opportunities for expansion, in the case of single-family units. The minimum measures adopted by each program are determined, in general terms, by housing cost pressures, often ignoring the subjective dimensions, such as their domestic customs (Folz and Martucci, 2007). The quality of housing is a key factor in residents' well-being and should take into account the individual needs of families, as well as promoting connections between residents and the space to be built. (Prudêncio et al., 2025)

In this sense, it is possible to say that social housing produced in Brazil, following this logic, fails to promote housing that is more than just a physical shelter. In some cases, these spaces do not meet the basic needs of residents and can have a negative impact on their physical and mental health. Reaffirming what Mauá and Pina stated in 2025, in the absence of urban planning, the interference of economic agents determines, guides, and transforms the environment to obtain greater profits, damaging humanized relationships and thus highlighting social inequalities (Mauá and Pina, 2025).

Therefore, it is important to reflect on the impacts of social housing units with increasingly smaller floor areas and their surroundings, which can cause damage to the health of their residents, as well as to interactions in the social environment, distancing themselves from the concept of a healthy city.

2 OBJECTIVES

The objective of this article is to assess the importance of intangible elements in the process of implementing Social Housing in a residential area in Campinas/SP and how they interact with the principles of the healthy city.

3 METHODOLOGY

For the development of this study, some theoretical references were used, such as the 2023 Pan American Health Organization (PAHO) Guide, "Criteria for Healthy Municipalities, Cities, and Communities in the Region of the Americas." This guide provides guidelines for designing, implementing, and monitoring public policies for the development of healthy

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municipalities. The criteria are based on three strategic pillars and are grouped into six areas of political action, as shown in Figure 1, providing recommended actions and means of verification, with local governments as key actors in achieving the health and well-being of their communities.

Figure 1 – Six areas of political action for the development of Healthy Municipalities, Cities, and Communities (MCCS) in a local political environment for the health and well-being of the population.

Source: Criteria for healthy municipalities, cities, and communities in the Region of the Americas, PAHO, 2023, translated by the authors.

This study also took into account the reference guide “Integrating health into urban and territorial planning,” prepared by UN-Habitat and the World Health Organization in 2023. It provides a set of guidelines for national governments, local authorities, civil society organizations and associations, and health and related professionals to promote collective well-being. This guide presents the premise that health needs to be considered an essential input for urban and territorial planning processes. Instead of placing problems at the center, people occupy the central place, supported by participatory processes and community empowerment, as shown in Figure 2.

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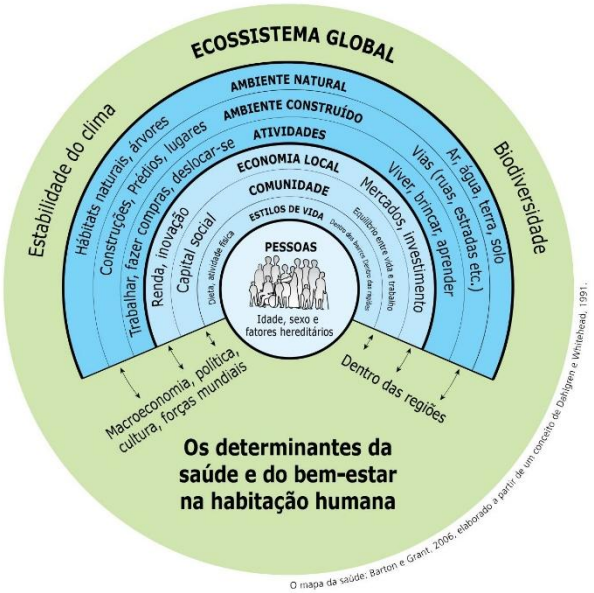
Figure 2 – The broader determinants of health and well-being relevant to urban and territorial planning in human housing.



Source: Barton and Grant, 2006, apud United Nations, 2023.

This diagram illustrates intersectoral data used in the field of public health, general and clinical epidemiology, which should be studied and discussed in urban planning.

The Guide also establishes four dimensions for health in the context of urban and territorial planning and highlights the importance of local contexts and the influence of responsible actors, namely:

- Basic planning and legislative standards to avoid health risks
- Planning codes that limit environments that undermine healthy lifestyles or exacerbate inequality
- Spatial structures to enable healthier lifestyles
- Urban and territorial processes to capture the multiple co-benefits of incorporating a health perspective into planning and development

Sperandio *et al*. (2019) discuss a methodology for dialogue and collective construction of the healthy city entitled "Map of Desires." Within the scope of this study, the map will not be applied to the location under study; however, it is important to highlight the importance given to participatory strategies. Of particular note is the role of intangible elements, desires, in building a healthy place, insofar as it offers conditions for the full development and belonging of individuals, according to Sperandio *et al*. (2024). Gallo et al. (2018), emphasize good governance practices, which include participation and democracy, to create a more just and inclusive city.

The 11 Healthy Cities Goals were adopted by the WHO as a means of progressing toward the United Nations' 17 Sustainable Development Goals (SDGs). In addition, it served as one of the bases for a study by Bafarasat *et al.*, 2023, which developed 99 Healthy City Indicators. The indicators can be used as a direct contribution to the inclusion of the 11 goals in urban planning and design, as well as for monitoring over time.

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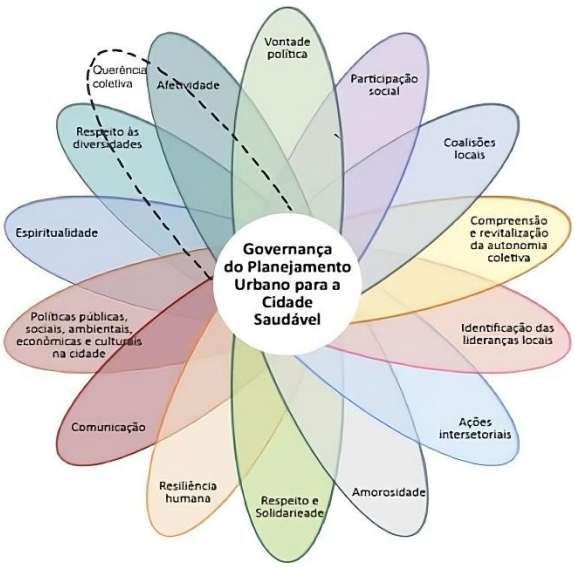
The "Sperandio Conceptual Mandala" was used to analyze the connection and integration of Urban Planning and Health Promotion strategies for a Healthy City. According to Sperandio *et al*. (2023), the Mandala, developed and readapted at the Urban Research Laboratory (LABINUR) and the Center for Studies on Urbanization and Knowledge and Innovation (CEUCI) of the Faculty of Civil Engineering, Architecture, and Urbanism (FECFAU) of the State University of Campinas (Unicamp), has its core formed by urban planning for a healthy city while its surroundings are composed of a coalition of urban planning and health promotion strategies, working in a common and balanced model, in which the forces that interact, coexist, intersect, bringing both order, and disorder, aiming at equitable collective governance.

Thus, as shown in Figure 3, the following are elements that contribute to Urban Planning Governance for Healthy Cities: political will; social participation; local coalitions; understanding and fostering collective autonomy; identification of local leaders; intersectoral actions; love; respect and solidarity; human resilience; communication; public, social, environmental, economic, and cultural policies in the city; spirituality; respect for diversity; affection and collective longing.

According to Sperandio *et al*. (2023), the coalition of urban planning and health promotion strategies for healthy cities represents a proposal for reflection and revision of concepts for using new tools to enhance quality of life, as an exercise in organizing strategies and developing a symbolic representation, seeking to facilitate the visualization of those involved in the process of social participation, as well as the understanding of decision-making for the benefit of the community.

Figure 3 – "Sperandio Conceptual Mandala": Coalition of Urban Planning and Health Promotion strategies for a Healthy City.



Source: Prepared and adapted at the Urban Research Laboratory (LABINUR) and the Center for Studies on Urbanization and Knowledge and Innovation (CEUCI), FECFAU-Unicamp, 2024.

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This theoretical framework is constructed to provide tools for studying the housing units at Residencial Mandela in light of the principles of a healthy city. In addition, it seeks to develop possibilities for analysis that place individuals at the center of the debate, understanding them as protagonists in the processes.

In view of the objective of this work, the methodological steps adopted aim to eximane at the dwellings built in Residencial Mandela and its immediate surroundings, understanding the material and intangible conditions that make these dwellings suitable or unsuitable as healthy housing. The first stage involved a bibliographic and documentary survey of the residential complex and the organization of relevant aspects to be analyzed in the dwellings studied and connections to be made with the healthy city. The experience report was used to characterize the construction process and establish the premises of the healthy city based on the "Sperandio Conceptual Mandala" instrument.

3.1 Experience report: Description of the Mandela Residential Project:

The Mandela Residential Project was selected for this article due to some characteristics presented in its implementation, such as: 15 m² minimal dwellings units; located in the city of Campinas, in the interior of São Paulo (fig. 4 and fig. 5) and it is a project developed for low-income families who were removed from potential risk areas and transferred to the residential complex, located less than 1 kilometer away from the occupation (COHAB Campinas, 2023).

The residential complex was presented as a solution for the Nelson Mandela urban occupation, located in the Industrial District of Campinas, on abandoned land occupied by a community of about 108 families. The families in the occupation had been settled in an area of 5,000 square meters since 2017, when a repossession of the former land left 600 people who lived in Jardim Capivari homeless. This was a region that was subject to violence during the eviction process. (G1 GLOBO CAMPINAS, 2023).

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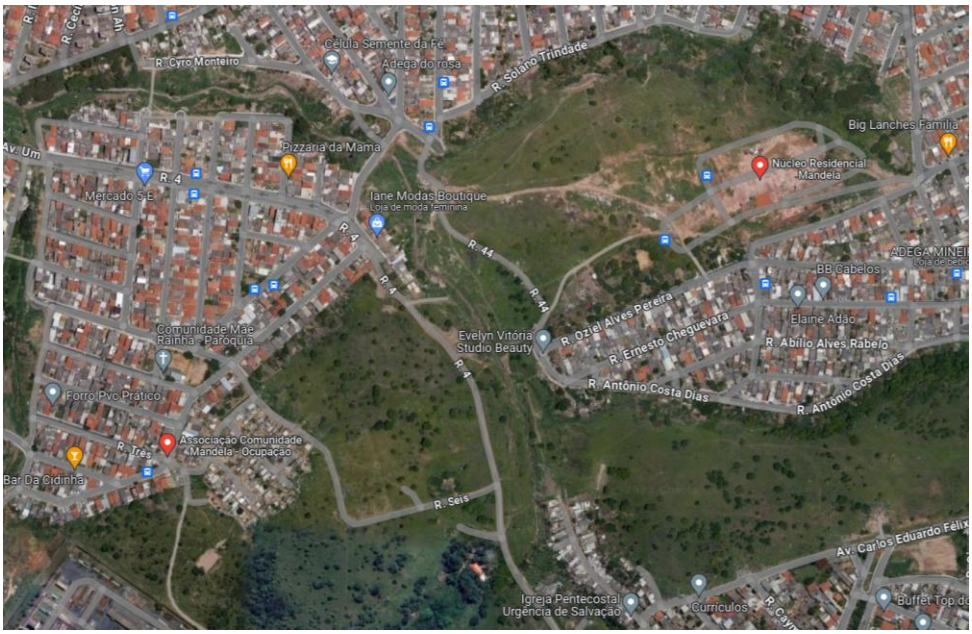
Figure 4 – Aerial image – Mandela Occupation and Mandela Residential Center, Campinas/SP, 2024



Source: Google Maps, 2024.

The Campinas City Hall, in partnership with the Campinas Popular Housing Company (Cohab - Campinas) and the Support Fund for the Urban Underhoused Population (Fundap) and other public sectors, led the Residencial Mandela social housing project.

The subdivision, located in DIC 5, Ouro Verde District, in Mixed Zone 1, with an approximate area of 23,000 square meters, is characterized by 90m² lots, measuring 6 meters wide by 15 meters long, therefore with an area below the minimum stipulated by Law 6,766/1979, justifying the reduction of almost 30% of the area based on this provision, according to Article 4, item II:

> II - lots shall have a minimum area of 125 square meters (one hundred and twenty-five square meters) and a minimum frontage of 5 (five) meters, except when the subdivision is intended for specific urbanization or the construction of social housing complexes, previously approved by the competent public agencies; (Brazil, 1979)

The population served corresponds to 116 families with different configurations, with media reports indicating families with up to 7 individuals. The estimated population of the residential complex is more than 450 people (COHAB Campinas, 2023).

The subdivision was paved and equipped with water and sewage networks, electricity, and public lighting. There was a proposal for subsequent stages to develop plans to expand the units, with options ranging from 33 to 54 square meters, to be financed by the Urban Underhoused Population Support Fund (FNHIS).

The residential area is characterized by large vacant areas, the subdivision's street layout does not match that of the neighboring subdivision, and it is accessed by only one road. Public transportation infrastructure was installed in the area, with three bus stops. Within a radius of one kilometer, it was possible to locate 10 educational facilities, 4 health facilities, and 4 leisure facilities (Figure 5).

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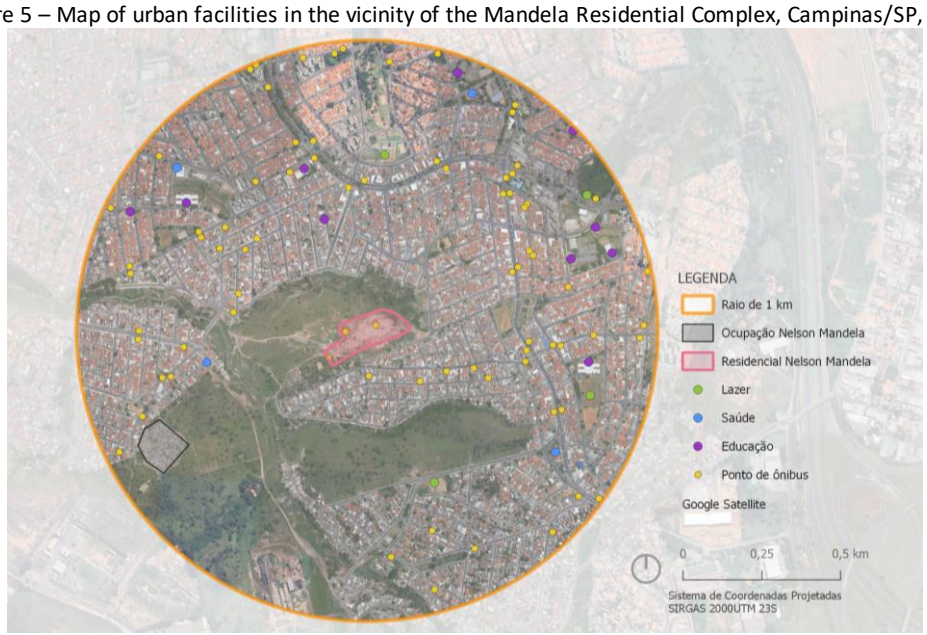
Figure 5 – Map of urban facilities in the vicinity of the Mandela Residential Complex, Campinas/SP, 2024

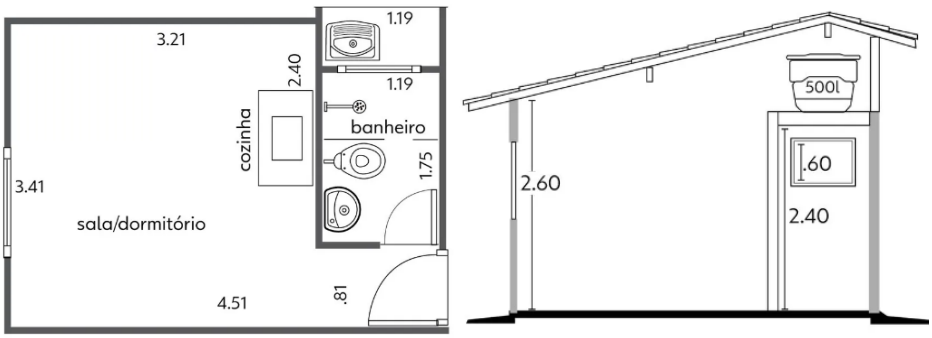


Source: authors, based on Google Maps, 2024.

The 15m² minimal dwellings have sanitary infrastructure installed, as shown in Figure 6. They feature two rooms, one of which is intended for multiple uses, such as a kitchen, living room, and bedroom.

The original ceiling height (distance between floor and roof) of the housing unit hinders expansion. This has led to adaptations with reduced headroom, or to constrution difficulties in meeting the minimum height specified in the municipality's urban legislation. The difficulties include altering the roof slope or designing roof geometry with a central gutter for internal environments. Air circulation is poor, with only one window in the room, making cross ventilation impossible.

Figure 6 – 15 m² house design developed for implementation in Residencial Mandela, in Campinas/SP, 2023



Source: Art/G1 Globo Campinas, 2023.

4 RESULTS AND DISCUSSIONS

It is important to note that by adopting the “Sperandio Conceptual Mandala” as an analytical tool for this study, we recognize that there may be limitations to the study, since the

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intangible elements that make up the Mandala are difficult to measure without in-depth contact with the object of study. However, the holistic understanding of the Mandala proved to be an appropriate tool for identifying and assessing the impact that minimum square footage residences may have on the health of residents. To address the research questions, considering the broad concept of health, a strategy that considers the broad issues of the territory was fundamental.

4.1 The Mandela Residential Complex based on the "Sperandio Conceptual Mandala"

The Nelson Mandela residential subdivision was the result of a legal process, following the repossession of an adjacent private area. This process reveals the first characteristics that can be compared to the items in the "Sperandio Conceptual Mandala": **social participation** and identification of **local leaders**. The Mandela Resiste movement is characterized by black and female leaders, supported by the socialist political organization Brigadas Populares. These leaders, present since the beginning of the community's formation, played a central role in winning the right to housing and remain active in the current developments and actions of the residential complex. The engagement of leaders with activist groups helps in the legitimization and recognition of community rights. However, in terms of social participation, there was little participation in decision-making regarding the type of housing, a fact proven by the inadequacy of the minimal unit for large families. Social participation, in this context, was limited to the acceptance of relocation conditional on the promise of technical assistance and projects to expand the minimal dwellings, according to Mandl, 2023. (See Figure 8)

Despite the defined local leadership, social participation in the planning process for the units was not effective. Thus, there is a disconnect between strong local leadership and the impossibility of fulfilling the **population's desires**. The social cohesion of the community is driven by the need for organization as a way to demand past promises and future improvements.

Intersectorality, an important item in the "Sperandio Conceptual Mandala," is also applied in the production of social housing, as it allows citizens to be considered in their entirety, both in terms of their individual and collective needs. Despite the presence of urban and housing planning agencies involved in the development of Residencial Mandela, the application of intersectoral actions was not evident, and the main difficulty in communication perceived in this study was between the health and social assistance sectors in the residential typology decision-making process. Dialogue between the education, labor, and income sectors could lead to better strategies for the collective construction of social well-being in the community. (See Figure 8)

The units delivered by COHAB in the Nelson Mandela Residential Complex have the same square footage, in a unit called "embryo," according to the Campinas City Hall, 2023, disregarding the individual needs of families. Thus, there is a lack of **respect for diversity**, an item in the Mandala that is essential for achieving equity in public policies. At this point, it is possible to verify a great compromise of privacy, as a dimension of the expression of individuality, due to the high population density in the housing. In the Residential Complex in question, there are records of units with up to eight individuals, a common reality in communities. (See figure 8).

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Pasternak (2016) discusses the concept of adequate housing, presenting, among others, the studies by Chombart de Lauwe's team on overcrowding and confinement. According to the study, there are some indispensable limits for cohabitation, below which it is already possible to observe impacts on health, as shown in Table 1 below:

Table 1 – Limit housing areas

Type of limit	Area per person	Inhabitants per room
Pathological (occurrence of physical and mental health disorders)	8 a 10 m²	2,5
Critical (high probability of physical and mental health disorders)	12 a 14 m²	2

Source: authors, based on Chombart de Lauwe *et al*., 1967

Considering these limits, it is possible to observe that the housing offered at Residencial Mandela does not meet minimum health parameters, in addition to disregarding individual particularities and the need for privacy, affecting residents in intangible ways. The solution of minimal dwellings is not effective, as the promised assistance for the expansion and adaptation of the units was not carried out. Thus, families either continue to live in units with a large number of people and without the urban infrastructure necessary to promote community and individual health, or in dwellings with precarious extensions, as shown in Figure 7.

Figure 7 – Google Street View image, captured in December 2024, showing some of the buildings located in Residencial Mandela.

Source: Google Street View, 2024

During the study and through Google Street View images from 2024, it was observed that there was a lack of urban trees in the residential area and its immediate surroundings, a fundamental element that contributes to reducing temperatures in the urban environment. According to Bafarasat *et al*. (2023), the indicator related to urban green areas directly impacts goal 2 of a healthy city: a stable and long-term sustainable ecosystem.

It is important to remember the premises outlined in the United Nations report, in the 2025 report, Adequate Housing for All, which emphasizes that decent housing must be placed

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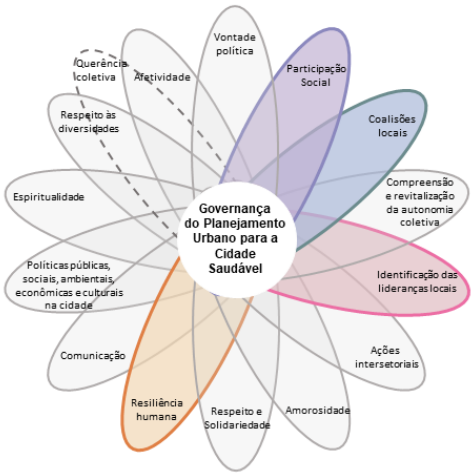
at the center of the political decision-making process and the Sustainable Development Goals (SDGs), emphasizing that for a better future, adequate housing and sustainable urbanization are necessary. (UN-Habitat, 2025)

One year after the delivery of the minimal dwellings and infrastructure of Residencial Mandela, it is clear that the community's perseverance remains strong. In this community and in so many other low-income communities in the country, which face structural deficiencies and unmet basic needs on a daily basis, **human resilience** is evident, mainly through strengthened leadership, as a form of adaptation and a continuous effort to transform reality. Currently, self-construction processes are underway in the community to expand housing, with both temporary and permanent solutions, as well as continuous action by leaders to ensure the technical assistance promised by the government for the expansion of the units. (See Figure 8)

Figure 8 – Coalition of Urban Planning and Health Promotion strategies for a Healthy City, applied to the Mandela Residential Center, Campinas/SP, based on the "Sperandio Conceptual Mandala."



Source: Prepared and adapted at the Urban Research Laboratory and the Center for Studies on Urbanization and Knowledge and Innovation (CEUCI), 2025.

According to Lazarini, Lima, and Rolnik (2025), the institutionalization of collective property by the State acts ambivalently, on the one hand limiting and controlling the possibilities of autonomy in the management of territories, and on the other hand, as a product and platform for social struggles, opening up possibilities for the development of collective political subjects. The experience of the formation process of Residencial Mandela exemplifies this reality, with the formation of an active and representative community, active since the occupation, and continuing to the present moment, in the struggle to guarantee technical assistance for the expansions. On the other hand, this discussion reinforces the need for the applicability of the intangible elements of the "Sperandio Conceptual Mandala," because, otherwise, the proposals would distance themselves from the process of building a healthy space.

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5 CONCLUSION

This text addressed the applicability of a tool, the "Sperandio Conceptual Mandala," in a residential area located in a highly vulnerable area of Campinas, São Paulo. The study's aim was to highlight the intangible elements (political will; social participation; local coalitions; understanding and revitalization of collective autonomy; identification of local leaders; intersectoral actions; love; respect and solidarity; human resilience; communication; public, social, environmental, economic, and cultural policies in the city; spirituality; respect for diversity; affection) that are crucial for housing policy agendas in the second decade of the 21st century.

The Mandela Residential Complex can be adopted as a starting point for discussing the impacts of how Social Housing is built in Brazil. The Brazilian context of housing demand is complex, but government actions often fail to effectively address this issue. Minimal dwellings solutions are presented as alternatives for the rapid construction of housing units; however, without proper technical monitoring, the adaptation and expansion of these units is difficult Furthermore, *this situation hinders* strategies to achieve healthy living spaces and collective well-being.

Research shows that families living in poor infrastructure conditions that do not meet basic requirements are affected in terms of physical and mental health, which impacts health and well-being determinants (UN-Habitat, 2025).

The importance of applying easy-to-understand and low-cost instruments can guide public managers in an intersectoral manner, as well as leading to the achievement of positive indicators of health and well-being for the population.

The application of the "Sperandio Conceptual Mandala" as a guiding instrument for public policies aimed at promoting social housing has the potential to transform the outcome of both the housing units and the urban complex that receives the housing or arises from its implementation.

Air circulation, adequate lighting, mitigation of intense heat, and thermal and lighting comfort can be considered determining factors for either health or illness and, therefore, should be evaluated in the context of housing units, in the context of increasingly frequent heat waves due to climate change. Thus, the analysis of the surroundings, the identification of available infrastructure and equipment, and the verification of the ease and difficulty of access to basic services, such as mobility, health, and education, should be considered as components for the development of a healthy space.

In situations of similarity in terms of the minimum area of the housing unit, the real estate market in large metropolises, such as São Paulo, has offered apartments called Studios, generally with an area between 20 m² and 40 m², with an integrated floor plan, that is, without division of rooms between bedroom, living room, and kitchen. These developments usually offer services and spaces in their common areas to complement the private areas, such as gourmet spaces for gatherings, coworking as a workplace option, and communal laundry facilities.

These types of units are sought after by students and singles as residents and mainly by investors for rental, such as buyers, who bet on the appeal of mobility and centrality. In the

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city of São Paulo, changes in zoning rules in areas close to public transportation corridors have encouraged the emergence of this type of real estate development, facilitating quick access and travel around the city.

If, on the one hand, the metropolis and its urban services and mobility offerings attract more and more people to live in minimal, integrated apartments, this same square footage when offered to the low-income population, such as at Residencial Mandela, highlights the disparities in access to services and also exposes these residents to unhealthy situations, as family configurations of single individuals are rare. This condemns large families to problematic conditions both inside and outside the home, for the most basic movements of urban life.

The composition of material and intangible elements, which must be incorporated into the decision-making process, is fundamental to the development of social housing and the creation of healthy environments.

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STATEMENTS

AUTHOR CONTRIBUTIONS

- **Study Conception and Design**: Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli.
- **Data Curation**: Ana Maria Girotti Sperandio e Ana Carolina Rodrigues.
- **Formal Analysis**: Ana Maria Girotti Sperandio e Ana Carolina Rodrigues.
- **Grant Obtainment**: None.
- **Investigation**: Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli.
- **Methods**: Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli.
- **Writing - First Draft**: Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli.
- **Writing - Review**: Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli.
- **Review and Final Editing**: Ana Maria Girotti Sperandio e Ana Carolina Rodrigues.
- **Oversight**: Ana Maria Girotti Sperandio.

CONFLICTS OF INTEREST STATEMENT

We, **Ana Maria Girotti Sperandio, Ana Carolina Rodrigues e Lara Vilela Vitarelli**, hereby state, regarding the pper entitle "**A habitação de interesse social e os princípios da cidade saudável**":

1. **Financial Interests**: This work does not involve any financial interests that could influence its results or interpretations.
2. **Professional Relationships**: This work does not involve any professional relationships that could affect its analysis, interpretations, or the display of results
3. **Personal Conflicts**: This work does not involve any personal conflicts of interest related to its contents.