Knowledge Districts Prioritize Healthy Development

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Abstract/Abstract. This study addressed the cities of Conchal and Santa Bárbara d'Oeste in the state of São Paulo and Plano and Frisco in Texas, seeking to identify connections between healthy cities and the potential development of Healthy Knowledge Districts. The crucial role of social participation in health promotion was highlighted, as evidenced by the practices of municipal councils and public consultations. A concern in the planning of healthy municipalities was observed in integrating elements conducive to intellectual growth, innovation, and collaboration, which materialized in innovation centers, institutional partnerships, and educational programs. The results emphasize the importance of a multidisciplinary urban infrastructure for developing healthy, sustainable, and knowledge-advancing communities, thus outlining the emerging concept of the Healthy Knowledge District.

Keywords: Urban Planning, Healthy Municipalities, Urban Health Promotion, Social Participation, Healthy Knowledge Districts.

1 Introduction

The 21st century has been marked by significant events that have impacted the planet and its inhabitants, defragmenting collective action. The world faces challenges such as wars, hunger, infant mortality, and environmental emergencies, affecting the global economy and access to services and unbalancing people's physical and mental health. Environmental issues, such as rising temperatures, floods, and fires, further elevate concern about implementing measures to improve well-being, reduce health disparities, and address the impact on planetary health.

The Intergovernmental Panel on Climate Change (IPCC, 2021) report highlights the importance of "climate-resilient development," emphasizing the need to balance local regeneration and global climate resilience. Cities are touted as leaders in creating a more sustainable world, highlighting climate change-resilient development to ensure a healthy future. Cities play a vital role in driving global improvements through urban renewal. (Springer, 2023 resilience)

The World Health Organization (WHO) is reviewing the urban health agenda, which assesses the effectiveness of collaboration between urban systems and actors. The importance of urban planning in achieving health goals is highlighted, as evidenced during the COVID-19 pandemic. WHO has launched a comprehensive program to consolidate efforts in urban health, including a strategic guide to establish a comprehensive urban health agenda.

Achieving a balance between individual and planetary health is a challenge for cities, which must meet local and global needs. Rapid behavioral changes are essential to promote a sustainable lifestyle. Nature-based solutions, such as vegetable gardens and medicinal beds, understandably assist environmental stewardship and public education.

Creating macro policies through partnerships between government, non-governmental organizations, and society is crucial to improving urban health, covering communicable and non-communicable diseases, violence, injuries, hunger, and poverty. Start with micro-policies and establish a networked movement to expand other localities.

Urban planning has a profound impact on well-being. WHO recognizes the importance of cities and has initiated a program to consolidate efforts in urban health by developing a strategic guide (WHO Guide to Urban Health: Healthy Cities for a Healthy Future. 2016). Society needs to reorganize itself with simple measures involving public management, society's opinion, and university research. Gentle technologies are crucial to promoting a healthy environment. Considering the interconnectedness between people, animals, and vegetation when taking a comprehensive approach can create a sustainable habitat.

The "Sperandio Conceptual Mandala" (MCS), developed in 2018 and constantly updated (Sperandio, 2023, p. 23), evaluates health promotion in urban areas. It identifies material and non-material elements associated with MCS petals, which are crucial in promoting sociocultural, biological, and urban health. This tool has been successfully implemented in municipalities such as Santa Bárbara, Barretos, and Conchal in São Paulo, Brazil, among other locations, including municipalities in the United States. This mandala has been an important tool that can be used in the districts of knowledge.

In the context of the development of Fourth Generation Knowledge Districts 2024 (FGKD 2024), it is relevant to consider how district areas can be integrated into healthy urban strategies. Collaboration between local governments, civil society, academia, and the environment can enhance the implementation of sustainable measures and promote a technical and social approach to healthy urban development.

2 Goal

This article aims to comprehensively identify and systematize the strategies and criteria utilized by national and international municipalities to facilitate the establishment and growth of Knowledge Districts within the framework of a Healthy concept.

3 Methodology

The methodology of result analysis was the triangulation of data obtained from different sources. Minayo et al. (2005, p. 29) state that triangulation can enable the use of various

data collection techniques that accompany the research work, thus allowing a panoramic view of the evidence collected. This study compares the quality of life and well-being in four cities: Conchal and Santa Bárbara d'Oeste, in São Paulo, Brazil, and Frisco and Plano, in Texas, United States. Triangulation is a research technique combining different data collection methods to get a more complete picture of the phenomenon being studied. In this case, the MCS is an assessment tool that assists the research stages.

The methodology is divided into three distinct phases, each with its specific focus, but all using MCS as a guide for data collection and analysis.

The first stage of this research consisted of conducting a literature review that collaborated with the work. This process explained the existing primary literature related to the theme of the healthy municipality and its intertwining with the development of Knowledge Districts.

In the second phase, the approach is quantitative. It involves collecting quantitative data on the factors contributing to the increase in the quality of life in the four cities. Data sources include government information, opinion polls, guidance documents, reports, plans, and articles. MCS is used to structure data collection and identify material and non-material elements in cities.

In the third phase, healthy city movements that can collaborate in implementing the Knowledge Districts were identified. Thus, they can contribute and provide a relevant understanding between cities, society, and urban planning strategies that promote the collective well-being of those who live in these cities. (2019, Wish Map)

After organizing the data collected in the different phases, triangular analysis was used. The results are compared and integrated, providing a more complete view of the phenomenon studied. This approach helps to avoid potential biases that could be present in a single research method, providing a deeper and more complete understanding of the quality of life and public policies in the cities under study.

4 Municipalities studied

Four cities were analyzed: Conchal and Santa Bárbara d'Oeste in São Paulo, Brazil, and Frisco and Plano in Texas, USA. The study sought strategies to improve the quality of urban life, especially in Knowledge District areas, considering the history of the Network of Healthy Municipalities' study of Brazilian cities and the constant positive classification of Texan cities as the best places to live.

4.1 **Conchal**

With about 30,000 residents, Conchal stands out for its serenity and quality of life. The city prioritizes promoting quality of life, evidenced by health indicators such as infant mortality rate (10.0 per thousand live births) and life expectancy (77.5 years).

Education is essential, with high rates of literacy (98.5%), school enrollment (95%), and (6.7) Basic Education Development Index - Ideb. It offers several leisure options, with 10.0 m2 of green area per inhabitant, 100 leisure facilities, and 50 annual events.

Conchal's active community stands out for its engagement, with 50 organizations and a social participation rate of 75%. Environmental preservation is central (50% of the territory),

with efficient urban infrastructure (95% of paved streets, 98% public lighting, 99% waste collection).
Other data reinforce the attractiveness, such as a safety index (39% consider it "excellent" or "good"), a low unemployment rate (5.0%), and an average income of R$3,500.00. Despite health challenges, collaborative efforts address obesity and specific diseases.
In the "Knowledge Territories" area, local initiatives, including the Municipal Secretariat of Science, Technology, and Innovation (2021), indicate potential for knowledge-based development, especially in education, technology, and sustainability.

4.2 Santa Bárbara d'Oeste

Santa Bárbara d'Oeste stands out in São Paulo for its high quality of life, recognized by IstoÉ magazine. With a population of 220 thousand inhabitants in 280 km², the city maintains a population density of 783.6 inhabitants/km². Its efficient health system is evidenced by the low infant mortality rate (8.0 per thousand live births) and life expectancy of 78.5 years, with comprehensive basic sanitation reaching 99%.
In education, Santa Bárbara d'Oeste maintains high IDEB scores (6.8 out of 10), reflecting its commitment to several public and private educational institutions.
The city actively promotes environmental preservation, allocating more than 55% of its territory to protected areas, evidenced by vast urban green spaces and an urban afforestation rate of 85%, balancing urban development and ecological preservation.
The infrastructure stands out with maintained roads, efficient public transportation, and a reliable power grid, providing a convenient lifestyle. The engaged community is characterized by hospitality, civic duty, and active participation in cultural and sporting events.
Santa Bárbara d'Oeste seeks to become a center of knowledge, as evidenced by the Municipal Secretariat of Science, Technology and Innovation creation in 2021. Investments in education and support for startups signal a development path despite challenges such as the lack of a specific plan and the need for investments in infrastructure. The presence of educational institutions and government interest supports the city's potential to become a center of knowledge.

4.3 Plano

Plano, a medium-sized city in Texas, seeks to become a Knowledge District, standing out for economic diversity in technology, commerce, and services. With a median age of 34 and a median household income of $135,000 a year, it reflects prosperity.
Health challenges include obesity, diabetes, and heart disease. Collaborations with institutions such as the Collin County Health Department and Plano Independent School District aim for wellness. Proposals include expanding access to healthy food, creating parks, and encouraging sustainable transportation.
Health indicators highlight strengths and areas for improvement. Plano invests $5 million in knowledge territories, attracting innovation from the University of Texas. The 2022 economic plan shows commitment to knowledge-based companies, promoting innovation and development.

When facing health challenges, Plano strives to develop Knowledge Territories. With a clear strategy, robust investments, and academic partnerships, the city creates an environment conducive to economic prosperity and advances in knowledge, balancing health and sustainable development.

4.4 Frisco

Frisco, Texas, seeks to become a knowledge hub with approximately 200,000 inhabitants and remarkable indicators. Its low infant mortality rate (5.0 per thousand live births) and robust life expectancy (79.0 years), with 100% basic sanitation.
In education, Frisco achieves 99.0% literacy, 98% enrollment, and high SAT scores (1,100 out of 1,600). Consistently invests in educational quality. It offers ample leisure options, with 15.0 m² of green area per inhabitant, 150 facilities, and 75 annual events, promoting cultural and physical development.
Environmental commitment is evident, with 20% of the territory allocated to conservation and an urban afforestation rate of 90%. Efficient infrastructure contributes to a high quality of life, with 100% paved streets, full lighting, comprehensive garbage collection, and a low crime rate (4,000 crimes per 100,000 inhabitants), with a 90% perception of safety.
Economically prosperous, Frisco has low unemployment (3.0%) and a high average annual income (US$100,000.00). It invests in knowledge territories, led by entities such as the Frisco Chamber of Commerce and the Frisco Economic Development Corporation, with support from the Frisco City Council and an approved economic development plan with US$ 10 million for Knowledge territories.
In addition to offering an exceptional quality of life, Frisco is actively shaping its future as a dynamic center of knowledge, fostering innovation and prosperity.

5 Model for Urban Development

5.1 Quality of Life in Cities

Conchal and Santa Bárbara d'Oeste are two cities in São Paulo, Brazil. They share similarities with Plano and Frisco, two cities in Texas, United States, although their cultural and geographical contexts differ.
Both Brazilian cities provide their residents with a high quality of life, with remarkable health, education, and infrastructure levels. They create safe and supportive environments that encourage personal growth. Similarly, the American cities of Plano and Frisco are also known for their excellent living standards. They stand out for their strong economies, efficient urban infrastructures, and ample recreation and environmental preservation spaces.
Comparisons between cities include relevant information about health problems between them and in comparison with global media data, as seen in Table 1, obtained from the "Global Burden of Disease 2020" report published by the World Health Organization (WHO). This report estimates the global burden of disease, injury, and risk factors worldwide. As we can see in the table, the four cities analyzed have prevalence rates of chronic diseases similar to the world average. However, there are some key differences to

highlight. For example, Brazilian cities have slightly lower rates of obesity and depression than the world average. On the other hand, US cities have slightly higher rates of diabetes and respiratory problems than the world average.
Several factors, including socioeconomic differences, lifestyles, and healthcare systems, can explain these differences. For example, Brazilian cities have slightly lower rates of obesity and depression than the world average, possibly due to factors such as a diet richer in fruits, vegetables, and legumes and a more family- and community-focused culture. On the other hand, US cities have slightly higher rates of diabetes and respiratory problems than the world average, possibly due to factors such as a diet higher in processed foods and a culture more focused on work and individualism.

Table 1. Comparison of the prevalence of chronic diseases in Brazilian and American cities.

City	Obesity	Diabetes	Heart Disese	Stroke	Depressão	Malnutrition	Breathing problems
Conchal, SP	25.6%	10.5%	15.2%	6.7%	12.3%	5.2%	12.9%
Plano, TX	27.6%	11.5%	16.2%	6.9%	12.6%	4.7%	13.1%
Santa Bárbara d'Oeste, SP	25.6%	10.5%	15.2%	6.7%	12.3%	5.2%	12.9%
Frisco, TX	27.6%	11.5%	16.2%	6.9%	12.6%	4.7%	13.1%
World average	25.3%	9.5%	15.2%	6.8%	12.1%	10.3%	12.7%

When comparing the four cities, it is clear that both Frisco and Plano have high literacy and education rates, demonstrating their commitment to the intellectual development of their citizens. On the other hand, Santa Bárbara d'Oeste and Conchal are known for their vast green areas and actively promoting cultural and sporting events. Regarding urban infrastructure, all four cities prioritize the comfort and well-being of their inhabitants. They feature paved streets, efficient street lighting, and comprehensive garbage collection systems, providing an exceptional quality of life.
However, it is crucial to highlight that popular participation plays a vital role in achieving these high standards. Community participation contributes to constructing more effective and inclusive public policies in Brazilian and American cities. For example, Conchal has a history of investing in public health, focusing on disease prevention and health promotion. Laws and policies such as the free vaccination program, health education programs, and promotion of physical activity reflect the city's commitment to the well-being of its population. Santa Bárbara d'Oeste stands out for its child protection laws that promote healthy eating and physical activity. These measures aim to create healthy environments from childhood by promoting healthy lifestyle habits. Frisco is known for its strong focus on health, with initiatives such as healthcare access programs, physical activity promotion, and environmental protection. These projects address broad aspects of healthcare, from providing medical care to preserving the environment. Plano also has laws and public policies encouraging mental health, such as promoting healthy eating and physical activity. These measures reflect the city's commitment to the holistic health of its population, considering both physical and mental aspects.
The laws and public policies that promote health in Conchal, Santa Bárbara d'Oeste, Frisco, and Plano are examples of how local governments can work to improve the health and well-being of their residents. These initiatives address various topics, including public

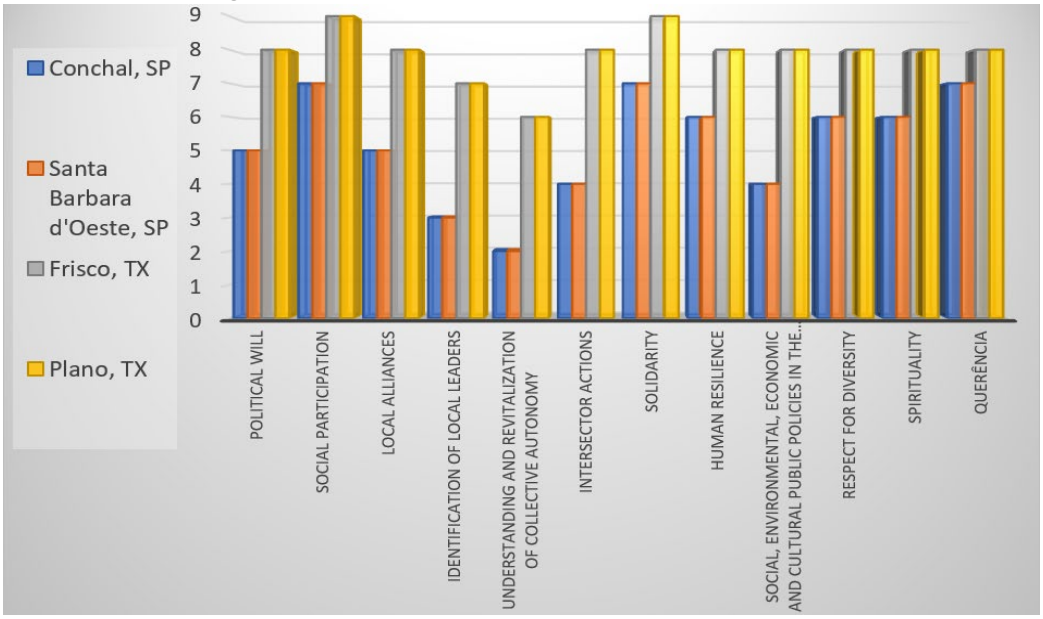
health, education, housing, transportation, and the environment. They demonstrate the comprehensiveness and comprehensiveness necessary to ensure a sustainable and meaningful quality of life for the population.

5.2 Sperandio Conceptual Mandala

MCS is a conceptual framework that integrates essential principles for healthy urban planning. These include public policy, respect, solidarity, human resilience, compassion, collaboration, indigenous leadership, local coalitions, social participation, inclusion, political will, and collective autonomy. The study highlights the usefulness of MCS in guiding the development of healthy urban environments by assessing the level of presence of its elements in each city.

Figure 1 shows the evaluation of the presence of MCS elements in each city. American cities exhibit more significant development in political will, social participation, and solidarity. Conchal and Santa Bárbara d'Oeste have similar levels of development in all elements of MCS, emphasizing social and community organizations. Frisco and Plano excel in several elements, supported by the public administration and diverse population.

Figure 1. Elements of MCS were studied in each of the cities.



5.3 Relationship between MCS and Global Quality of Life Index

The MCS assesses crucial elements for developing healthy cities, while the Global Quality of Life Index measures the quality of life considering health, education, security, culture, and infrastructure. The analysis shows a positive correlation between MCS elements and performance in the Global Quality of Life Index, as shown in Table 2. Cities with a higher presence of MCS generally perform better in the index.

Table 2. The following table summarizes this relationship:

Cities	Global Quality of Life Index	Presence of MCS Elements
Conchal, SP	76.50	Middle
Santa Barbara d'Oeste, SP	77.00	Middle
Frisco, TX	83.50	High
Plano, TX	84.00	High

The table indicates that cities with a high presence of MCS elements, such as Frisco and Plano, outperform the Global Quality of Life Index, highlighting the importance of investing in these elements to improve the population's quality of life.

5.4 Knowledge District

The path cities must follow to consolidate a Knowledge District involves meticulous planning. This journey requires a convergence of efforts between the public and private sectors, educational institutions, and the local community to bring together studious, talented, and motivated people gathered in close locations who exchange ideas and knowledge to improve the process, as Katz and Wagner (2014) say.

The transition to a Knowledge District can be outlined through a strategic approach that comprises the following key elements:

Vision and Strategic Planning: The first step is to formulate a clear and comprehensive vision, define priority sectors, establish long-term objectives, and create a comprehensive strategic plan. This is similar to the investigation by Qiu and Drennan (2019), which indicated how strategic planning can be used to create environments conducive to innovation and stimulate collaboration between companies, universities, and research institutions.

Technological and Educational Infrastructures: Substantial investments in technological infrastructures are imperative, creating an environment conducive to innovation and research. Furthermore, according to Rallet et al. (2015), strengthening local educational institutions and establishing solid partnerships with universities and research centers, public and private, to form a robust knowledge base is crucial.

Attracting Talent and Companies: Fostering talent attraction requires training programs, scholarships, and the creation of attractive conditions for qualified professionals. At the same time, implementing tax incentives and support policies is essential to attract innovative companies.

Innovation and Collaborative Research: Stimulating a culture of innovation involves creating spaces for collaboration, such as incubators and research laboratories, promoting interaction between companies, researchers, and entrepreneurs.

Sustainable Urban Development: Urban planning should be sustainability-oriented, considering green spaces, accessibility, and infrastructure that promote the quality of life for residents. Creating attractive urban environments is crucial for attracting talent and investment.

Collaboration Networks: Establishing collaboration networks between businesses, research institutions, and government agencies is essential for creating a dynamic

ecosystem. This can include public-private partnerships, industry clusters, and events that foster interaction between the various actors.

Promoting Diversity and Inclusion: Diversity is crucial for innovation. Therefore, policies that promote diversity and inclusion should be integrated into the Knowledge District's development strategy.

Continuous Monitoring and Evaluation: Implementing an effective monitoring and evaluation system is vital for measuring progress, identifying areas for improvement, and ensuring that strategies are continuously adapted as needs evolve.

By treading this path, cities will strengthen their position to cultivate an environment conducive to innovation, research, and sustainable economic development. This transition drives economic growth and cements the city's global position as a vibrant hub of knowledge and creativity.

5.5 Knowledge Hubs and Districts:

The cities studied reveal a variety of stages of development in the Territories of Knowledge. Although related, knowledge Centers (Hubs) and Districts have marked conceptual differences.

Hubs are typically focal points for innovation, technology, or research activities. They can cover different areas, such as technology, business, and art, with a broader and more flexible scope. Knowledge districts are urban areas designed to house educational, research, innovation, and business institutions, forming an integrated ecosystem that generally has a specific specialization, such as information technology or life sciences.

The evolution from a Center to a Knowledge District involves developing a more defined specialization, integrating academic institutions, investing in infrastructure, and attracting specific talents aligned with ongoing government policies. This is an opportunity to introduce a new pillar in the Knowledge Districts: health promotion.

This approach aims to boost innovation and knowledge advancement and create healthy spaces that promote collective happiness through participatory and inclusive public management. Developing these Hubs requires collective action, integration of different sectors, transparency in common objectives, and active involvement of civil society in this process (Sperandio & Bernardini, 2022, p. 13), which needs to be directly involved with other FGKD24 Helices.

6 Results and Discussions

Given the inherent complexity of contemporary cities, the search for the population's well-being transcends the simple provision of medical services and infrastructure. The social, economic, environmental, and cultural dimensions emerge as crucial elements in this scenario. From this perspective, social participation stands out as a vital component, enabling individuals engaged in decision-making to take responsibility for their health and their families and communities, according to Alves (2019).

The experiences lived in cities such as Conchal, Santa Bárbara d'Oeste, Plano, and Frisco show the effectiveness of social participation in health promotion. Strategies such as public consultations and municipal councils demonstrate the integration of the community in

decision-making, generating positive impacts in crucial areas such as primary health care, physical activity promotion, and healthy eating habits promotion.

However, as these cities seek further to improve the quality of life of their inhabitants, an innovative perspective is emerging: the creation of Healthy Knowledge Districts. This is a challenging process, marked by fundamental steps. The first step lies in clearly defining the vision and objectives of the Knowledge District, delineating its purpose, identifying priority areas of knowledge, and establishing measurable goals. An inclusive working group of representatives from different sectors helps ensure a comprehensive approach.

The second step is detailed strategic planning, which encompasses a thorough analysis of the local context, the definition of specific strategies, and consideration of factors such as attracting companies and talent, developing infrastructure, promoting collaboration, and investing in education. Finally, the third step, as Qiu and Drennan (2019) said, is rigorous implementation and monitoring, which becomes crucial for the long-term success of this venture. This includes establishing an effective governance structure, allocating resources appropriately, and continuously evaluating progress, allowing adjustments as needed.

A Healthy Knowledge District (HKD) is an approach to urban development that aims to create environments that promote knowledge, innovation, and quality of life. Such a district integrates elements that encourage economic growth and innovation and its inhabitants' physical, emotional, and social well-being.

In a thriving HKD, the innovation ecosystem is not just a concept but a testament to the power of collaboration. It involves a harmonious partnership between companies, research institutions, universities, startups, and civil society organizations, all united by a shared purpose of knowledge exchange and idea generation. This environment, which fosters the creation and dissemination of new technologies and concepts, is a testament to unity in diversity.

Next, knowledge infrastructure is essential. This includes buildings, laboratories, advanced communication networks, and collaborative workspaces facilitating interaction between the district's diverse participants. Public policies and governance are also key elements that must encourage innovation, entrepreneurship, and healthy promotion while ensuring effective coordination of activities in the district, involving both the public and private sectors. Improving the quality of life of the residents and workers in the district is a crucial concern. This includes developing green spaces, recreational areas, efficient transportation systems, and access to healthcare services and cultural programs. Education and talent development are also top priorities to ensure the district has a qualified workforce suited to its needs, from primary education to professional training programs.

Moreover, De Leeuw, Kickbusch, and Rüegg (2024) argue for a health promotion perspective that frames One Health in terms of positive health for people, animals, and ecosystems and includes a spiritual-cosmological dimension. This perspective enhances policy, research, and practice across disciplines and sectors for a more resilient and harmonious planet.

Finally, environmental and economic sustainability is critical. This includes sustainable construction and operating practices, efficient use of natural resources, renewable energy, and strategies to reduce the district's carbon footprint. These components are interconnected and mutually reinforcing to create a dynamic and healthy environment that stimulates innovation, promotes economic growth, and enhances the quality of life for people living and working in the knowledge district.

The idea of a Healthy Knowledge District is relatively new and emerged around 2020. Although there has yet to be an agreed definition for a fully established HKD, some cities are progressing in this direction. Here are some examples of initiatives that come close to the concept:

- Research Triangle Park (RTP), North Carolina, USA: RTP is a significant technology park that houses universities, research centers, and technology companies. Although the park has an economic focus, it also provides green spaces, walking and cycling trails, and employee wellness programs.

- Songdo International Business District, South Korea: Songdo is a smart development city that aims to embody sustainability and a high quality of life. It features energy-efficient buildings, integrated public transport systems, and broad access to health and leisure services.

Amsterdam Zuidas, Netherlands: Zuidas is a financial district that is investing in green spaces, public art, and cultural programming to make the area more lively and appealing for its residents and workers.

These examples are just a small part of the picture, and they need to fully address all aspects of a healthy knowledge district. The concept is dynamic, and cities are constantly innovating to create environments that foster innovation, sustainability, and well-being.

This paper explores creating a type of urban space called the HKD, which combines the principles relevant to the quality of life of the people who interact with this space. Firstly, the Healthy Cities Indicators guide urban planning and design that considers the results of assessing various aspects of a healthy city, with behavioral indicators for mental and physical health development. It also highlights the positive impact on social and environmental health and suggests additional measures to maximize welfare benefits. It is integrated with Knowledge Districts that concentrate on knowledge-based activities and aim to promote innovation, collaboration, and economic development.

The combination of these gives rise to the concept of the HKD. This territory would generate knowledge and innovation and prioritize the health and well-being of its residents, workers, and visitors. It proposes an integrated management plan for open spaces focusing on use, infrastructure, healthy routes, and ecological management. Monitoring and adjustments would be made to ensure effectiveness, as shown in Table 3 below.

Table 3. Key features of the Healthy Knowledge District:

Key features of the Healthy Knowledge District	
Characteristic	**Description**
Integrated Planning	Urban planning and design
	Risk Planning
	Legislation & Compliance
	Social connections.
	Departmental Integration
Knowledge-Based Solutions	Research Institutions and Universities
	Knowledge.
	Personalized Education Platforms
	Smart and Sustainable Cities
	Collaborative Research Platforms
	Robotics in Industry
Infrastructure for an Active Lifestyle	Extensive green spaces.
	Bike lanes and sidewalks.
	Quality public transport.
	Encouraging physical activity and reducing dependence on private vehicles
Healthy Infrastructure and Services	Easily accessible health facilities and community centers.
	Buildings designed to optimize natural light and ventilation.
	Community Gardens
	Interactive Parks
	Optimization of Natural Resources
Community Engagement	Promoting social interaction through events and programs.
	Initiatives that encourage healthy lifestyles and connect residents to nature.
	Social participation
	Participatory Workshops
	Partnerships with Local Organizations
	Cultural and Artistic Programs
Data-Driven Monitoring and Adaptation	Progress tracking.
	Identification of areas for improvement.
	Adjustments to the development of the district.
	Continuous Feedback Mechanisms

Table 3 was created from a study of guiding documents, articles, and books. The study "Health impact assessment and specification of monitoring indicators for the UDMP" of the Centro Direcional de Cerdanyola del Vallès (2020) served as the basis for the structure of the table, for the delimitation of main categories: Integrated Planning,
Knowledge-Based Solutions, Infrastructure for an Active Lifestyle, Healthy Infrastructure and Services, Community Engagement, and Data-Driven Monitoring and Adaptation.
The study of the comprehensive set of healthy cities indicators was used to refine and complement the indicators present in the first document (Thomas et al., 2014). From "Knowledge Cities: Kognopolis Network" by Rámon Sanguino and António Serrano, information can be recognized about the principal elements and characteristics of

Knowledge Districts, including the importance of collaboration between academia, industry, government, and community for the success of Knowledge Districts.
Common themes were identified across documents and grouped into main categories. Based on additional documents and research, relevant and measurable indicators were selected for each category.
The table summarizes the main characteristics of an HKD as a tool for urban planners, policymakers, and other stakeholders who want to create urban environments that promote health and well-being.

> “Because competence is the sum of knowledge, attitude, and skill, which can generate more favorable actions in the training process of architects and urban planners to better plan an environment or a city. In other words, one of the requirements of the Urban Architect is to learn the tools of urban planning and, also, knowledge of the health/disease process and the dimensions of a healthy city”. (Trevisan e Sperandio, 2023, p.15)

It is possible to identify some challenges in the already implemented Knowledge Districts (KD), such as the difficulty in mobility to reach the technological park and the need to build a network of people in favor of a territory of healthy knowledge. In order to develop a Healthy Knowledge District (HKD), social participation should be a significant concern because healthy social participation requires attractive material elements for developing individual and collective skills. It is necessary to provide space for the formation of human capital to make people feel like they belong to the place, which is essential to maintaining a healthy community and developing feelings of love for the area. This can be achieved by promoting interaction between people, nature, and the built space to provide a healthy physical and mental environment. This environment will stimulate creativity and group discussions and enable the dissemination of knowledge and innovations.

7 Conclusion:

This study in the cities of Conchal, Santa Bárbara d'Oeste, Plano, and Frisco highlighted initiatives promoting their inhabitants' health and well-being. By exploring elements such as social participation, urban infrastructure, and health indicators, we seek to understand how these cities face challenges and capitalize on opportunities to build healthier, more sustainable urban environments. It also highlights the need for good indicators to track cities' performance, as Giles-Corti et al. (2020) verified.
It became evident that social participation is a fundamental pillar in this process. Conchal and Santa Bárbara d'Oeste, in Brazil, and Plano and Frisco, in the United States, have actively sought to involve the population in decisions that affect their quality of life. Creating municipal councils, public consultations, and support for community groups stand out as common practices in these cities, promoting an inclusive approach to decision-making.
Analysis revealed a positive correlation between the MCS covering social, economic, environmental, and cultural aspects and the Global Quality of Life Index. This reinforces the idea that investing in these diverse dimensions creates healthier and more enjoyable communities.

KDs are an innovative concept for urban development. They concentrate on knowledge-intensive activities and promote collaboration between academia, industry, government, and the community. With characteristics such as an anchor institution, concentration of companies and startups, collaboration and interaction, adequate infrastructure, and a vibrant culture, KDs are powerful tools for stimulating innovation, economic growth, and improved quality of life.

Cities should invest in positive impact and good governance and encourage social capital strategies and collective autonomy, thus successfully involving communities and environments that contribute to reducing inequalities. Urban planning plays a different role in this process, as it can facilitate the creation of public spaces that promote social participation, the friendly interaction of people through social cohesion, and forming micro networks that are fundamental elements for the development of any healthy public Management.

By integrating the principles of KDs with the comprehensive approach to health promotion in the city, we highlight the importance of urban environments beyond the absence of disease, promoting physical, mental, and social well-being. The proposal of the Healthy Knowledge District emerges as a synthesis of these concepts, emphasizing physical health, intellectual growth, and innovation.

To create a healthy city, the territory must provide physical activities, vegetable gardens for healthy eating, cultural spaces, walking paths, respect for local heritage, and employment opportunities. The expansion of healthcare should also be monitored in living laboratories. Achieving this requires support from public management, universities, social representatives, and local companies, encouraging the vital principle of a healthy city: political will.

This integration offers an innovative vision for the future of healthy urban development, underscoring the continued need for integrated and participatory strategies to pursue genuinely healthy and resilient cities. The Knowledge District can be a space for facilitating the process of building healthy and sustainable urban environments, where collaboration, innovation, and human well-being are central priorities.

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