

## OBSERVATORY: A platform that interconnects information networks

OBSERVATÓRIO: Uma plataforma que interconecta redes de informação  
OBSERVATORIO: Una plataforma que interconecta redes de información

### Arthur de Sá Ferreira

PhD. Professor, Postgraduate Program in Local Development, Augusto Motta University Center.



0000-0001-7014-2002

### Jonas Davi Heiderick Mota

Master's Degree. Student, Postgraduate Program in Local Development, Augusto Motta University Center.



0000-0001-8881-8752

### Patrícia Maria Dusek

PhD. Professor, Postgraduate Program in Local Development, Augusto Motta University Center.



0000-0003-3911-6943

Mailing address: Dona Isabel Street, 94, Bonsucesso, ZIP Code 21032-060, Rio de Janeiro, Brazil.

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**ABSTRACT**

Observatories are platforms that have been interconnecting, grouping, and organizing information for over 40 years, but there is still little research on their construction, use, and relevance. This scoping review of the literature aims to clarify elements such as processes, purpose, and roles of observatories. Searches were conducted in electronic databases. Eighteen studies were included in the analysis, focusing on public health policy systems, specific health areas, and integration and technological surveillance systems. Observatories can reduce the time needed for data interpretation, expedite research, and assist managers in decision-making, contributing positively to technological and scientific advancements.

**KEYWORDS:** Information Technology; Online information systems; Policy making.

**Introduction**

Technology has been increasingly influencing decision-making by introducing data management and control tools, making research faster and easier in the pursuit of accurate decisions and positive results. Using technology to develop studies focused on public policies and health not only improves implementation processes but also enables systematic monitoring and follow-up, reducing the chances of errors and the time spent on unfeasible projects. Platforms capable of organizing, aggregating, and making information available to researchers and administrators are being employed in institutions and organizations to improve their processes and outcomes, seeking greater research agility and better results<sup>1</sup>.

Indicators are fundamental components for formulating public policies, as they are used for evaluation, forecasting, and monitoring. In an effort to create connections between science, technology, the economy, and society, observatories emerged. For monitoring various indicators and providing appropriate spaces to organize technologies, the Observatory establishes itself as a robust and dynamic platform that identifies the potentials, strengths, and weaknesses of the system to be implemented, creating a strategic and organized environment that facilitates decision-making, expands connections, and disseminates work and sociocultural projects associated with innovation and sustainability systems<sup>2</sup>.

An Observatory is an interconnected platform made available through a website whose function is to process and organize information, presenting data from a given study and disseminating knowledge. The word "Observatory" has its origins in astronomy, meaning "a place from which observations are made." In addition to its astronomical origin, the term has been used in the context of generating government actions aimed at improving living conditions, fostering discussions through indicators, and being largely present in the formulation, development, and monitoring of public health policies<sup>3</sup>. With the emergence of observatories, research areas now have an

instrument that not only distributes data but also analyzes social reality, using various methods and technological innovations to operate within the environment being developed, enabling the characterization of situations and the formulation of scenarios<sup>4</sup>.

Reducing social inequalities and poverty, protecting the environment, and ensuring that everyone can enjoy a healthier, less polluted environment are some of the goals of sustainable development. When we discuss sustainability, we are always developing ways and proposals for social and technological evolution that work in harmony with nature. The environment has been increasingly harmed each decade due to the rise of pollutants and climate change processes. Water-related diseases, climate-driven changes, floods, and respiratory problems resulting from droughts are becoming more common as nature and the environment continue to be devastated. Sustainability and preservation have become approaches that offer medium- and long-term benefits in addressing the difficulties caused by environmental degradation. Today, when developing a project in a city, location, or specific community, we must assess possible harm to nature and the sustainable benefits that the project will bring to the region where it will be implemented. Using tools capable of exposing realities—such as observatories—helps shape how humans interact with nature, generating discussions and proposals for environmental preservation<sup>5</sup>. Therefore, this study aimed to systematically review the elements that characterize the development of observatories.

## Methods

### *Study design*

A scoping review of the literature<sup>6</sup> was conducted, which will be reported following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)<sup>7</sup>.

### *Information source and search strategies*

We conducted a search in the following electronic databases: Scientific Electronic Library Online (SciELO) and the Virtual Health Library (VHL) platform, which includes the following databases: Nursing Database (BDENF), Latin American and Caribbean Health Sciences Literature (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE), Health Sciences Descriptors (DeCS), Literature on Health in

Cuba (CUMED), and the Human Resources in Health Repository (RHS). No temporal cohort or starting year restriction was applied to the studies.

The search was conducted on the SciELO platform using the keywords: observatory AND technology. On the VHL (Virtual Health Library) platform, using the BDNF, LILACS, MEDLINE, DeCS – Health Sciences Descriptors, CUMED, and RHS databases, the initial search was performed using the descriptors: observatory AND technology.

### *Eligibility criteria and selection of evidence sources*

Articles available in full text and written in Spanish, English, or Portuguese that addressed the theme of observatories as information networks were included. Articles were selected without an initial publication date limit, up to September 1, 2021. Articles that did not address the topic proposed in this study were excluded, as well as articles in other languages and studies that did not address the stated objective.

### *Data extraction and synthesis of results*

From the included studies, the following data were extracted: authors and year of publication; type of research; main objective; main conclusions; and electronic address of the observatories.

## **Results**

Initially, the SciELO search resulted in 35 articles, of which 30 were discarded for not addressing the topic proposed in this study. The search on the VHL platform resulted in 81 articles; 35 were excluded because they did not provide free full-text access. The remaining 46 articles were evaluated by the author of this study; after analysis, 25 were excluded for not addressing the proposed topic, and 8 were excluded due to duplication, leaving 13 articles for review from this platform. In total, 18 studies were selected for analysis after the stages of the scoping review.

### *Characteristics of the studies*

Table 1 summarizes the main objectives, study designs, and conclusions of the 18 articles included. Table 2 lists the observatories mentioned in the studies.

**Table 1**

*Studies selected for the scoping review – type of research, main objectives, and conclusions (n=18)*

<b>Authors/year</b>	<b>Main findings</b>
Martín-Hernández et al. <sup>8</sup>	From the products generated by the indicators, possibilities for intervention emerge in coordination with primary care, social agents, and health assets
Paim & Santos <sup>1</sup>	To represent a methodological option for rethinking the social sphere by reconsidering networks and relationships in health policies, made possible by technological changes and mediated by information and communication technologies
Persegona et al. <sup>3</sup>	An important management tool for decision-making, whether by nursing organizations or SUS administrators, contributing to greater visibility of the work carried out by nursing professionals
Pérez & Reyes <sup>9</sup>	This Observatory is a space for transforming information into knowledge for investigative action and decision-making
Fratin et al. <sup>10</sup>	The observatory will provide access to studies and issues related to the implementation of the SAE in health institutions
Morillo et al. <sup>11</sup>	High potential of the observatory as a foundation for academic cooperation processes and the formation of knowledge networks in the field
Paim & Santos <sup>12</sup>	There is a scarcity of publications on observatories; the study did not identify publications on implementation analyses nor evaluations of processes, products, or outcomes, according to the models used in health.
Moyares Norchales et al. <sup>13</sup>	The technological observatory enables collaborative exchange between the work team and the users of the center under study
Soares et al. <sup>14</sup>	The role carried out by observatories may become a powerful tool in public management, assisting in decision-making that promotes interventions within the context of public policies
Paim & Paim <sup>15</sup>	The SUS administrator finds in the Observatory a space to develop broader reflection, identifying progress and setbacks, and proposing new questions
Saldanha et al. <sup>16</sup>	The observatory makes it possible to provide informative reports for various categories of interest and levels of aggregation, helping to reduce the gap between data availability and information generation
Cifuentes Posada et al. <sup>17</sup>	It is necessary to continue the structuring and operation of the observatory as a proposal for popular education on the proper use of medications and medicinal plants, contributing to achieving positive outcomes in pharmacological therapy
Pinto & Rocha <sup>18</sup>	The network was able to positively support the training and continuing education processes of Family Health team professionals
Barcellos et al. <sup>5</sup>	The platform enabled the development of a multiscale strategy through the implementation of sentinel centers. The creation of an effective observatory is a participatory process that includes the selection of specific indicators
Conill <sup>19</sup>	There is a need for changes in the way services are regulated, organized, and delivered, with practices and public policies that ensure comprehensive care through interventions that allow for the sustainability of the systems.
Andrea Torres et al. <sup>20</sup>	The use of a health observatory generates evidence to support decision-making, and this technology also enables proper information management, ensuring high availability and accuracy

	of information
Pooransingh et al. <sup>21</sup>	A national SPO in Trinidad and Tobago could serve as a model for other Caribbean countries, beginning with the structural components and continuing with the functional components
Casajuana et al. <sup>22</sup>	The OBSA is known and consulted by most of the surveyed health professionals and is fulfilling some of its main objectives

Seven studies addressed an analysis of observatories within public health policy systems<sup>1,8,12,15,19,21-23</sup>. Three studies discussed the role of observatories in specific health areas—two in nursing and one in pharmacy<sup>3,10,17</sup>. One study reported the use of an observatory to identify lifestyle-related diseases and propose actions to improve health in the region where it was implemented<sup>20</sup>. One article addressed the use of an observatory for climate and health information<sup>5</sup>. One article reported the use of an observatory in primary care and health promotion<sup>18</sup>. One study proposed an epidemiological observatory for the Brazilian Unified Health System (SUS)<sup>16</sup>. One study described an observatory integrating Web 2.0 technologies<sup>13</sup>. One study described the use of an observatory in professional training in information science, supporting managers in the areas of science and technology<sup>11</sup>. One study characterized observatories and their structural elements<sup>14</sup>. One study addressed a technological surveillance system using a technological observatory; one study described the Coronavirus Metrics Observatory<sup>9</sup>.

**Table 2**

*Available links for the observatories mentioned in the studies included in the literature review (n=8)*

Asturias Observatories	<a href="https://obsaludasturias.com/obsa/">https://obsaludasturias.com/obsa/</a>
Latin American and Caribbean Gender Equality Observatory	<a href="https://oig.cepal.org">https://oig.cepal.org</a>
Community Health Observatory of Navarra	<a href="http://www.observatoriosalud.navarra.es/">http://www.observatoriosalud.navarra.es/</a>
Climate and Health Observatory	<a href="https://climaesaude.icict.fiocruz.br">https://climaesaude.icict.fiocruz.br</a>
Health Policy Analysis Observatory	<a href="https://www.analisepoliticaemsaude.org/oaps/">https://www.analisepoliticaemsaude.org/oaps/</a>
Ibero-American Observatory of Public Health Policies	<a href="https://sites.usp.br/iberoamericanoralhealth/">https://sites.usp.br/iberoamericanoralhealth/</a>
Occupational Health and Safety Observatory	<a href="https://smartlabbr.org/sst">https://smartlabbr.org/sst</a>
Nursing Care Systematization Observatory	<a href="http://biblioteca.cofen.gov.br/observatorio-sistematizacao-assistencia-enfermagem/">http://biblioteca.cofen.gov.br/observatorio-sistematizacao-assistencia-enfermagem/</a>

## Discussion

This study systematically reviewed the elements that characterize the creation and development of observatories, as well as their processes, purposes, and roles. In summary, the results suggest that observatories have been used in various fields, demonstrating the evolution and usefulness of this tool for distributing scientific knowledge. Polysemic in nature, the term “observatory” reflects typological diversity (from physical to virtual), as well as a multiplicity of purposes, functions, and methodologies employed. The lack of consensus on a definition of “observatory” makes its identification difficult and limits analysis of the phenomenon. Therefore, throughout its emergence and practice, its concept ends up being defined according to the perspective of the author or the practice in which the observatory is embedded<sup>14</sup>.

After more than four decades since the creation of the first observatory, and with the evolution of information technologies, this type of platform can now be seen in various fields of knowledge. The use of this resource in the areas of education, culture, and the environment has shown positive value as more studies are being published in these fields. Observatories allow the identification of factors related to the health of a population or region, promoting actions to improve public health in the place where they are implemented<sup>20</sup>.

Seven articles were identified in this research with the purpose of evaluating observatories in public health<sup>1,8,12,15,19,21-23</sup>. These studies reinforce the hybrid structure formed by the health system, public policies, and observatories, as they interconnect institutions, administrators, researchers, information networks, and other public policy instruments. Two other articles referenced the role of nursing, focusing on the systematization of care and the monitoring of COVID-19 among nursing professionals, with the objective of presenting a communication tool for the National Council and Regional Nursing Council Systems<sup>3,10</sup>.

An analytical study aimed at understanding the stages of creation and development of observatories stated that the results of observatories stem from the exchange of information within a space that organizes valuable content capable of increasing knowledge about social frameworks, presenting information that supports decision-making among managers and promotes interventions in various contexts<sup>14</sup>.

Three articles proposed observatories as planned projects designed to function as interconnected informational windows, with an interest in data that contribute to improving the health of a population and that integrate technologies. They described the design of technological surveillance systems using an integration platform that

provides an interactive virtual space with functionalities aimed at developing an information dynamic<sup>13,16,17</sup>.

Two articles reported the development of observatories and their results. They demonstrated that Observatories have the capacity to organize a large amount of scientific and technological data, connecting functions and generating new information. A set of measures, such as metric records, supported institutional projects aimed at quantifying and monitoring processes and daily actions. When we relate time to lives, we understand the importance of creating mechanisms that facilitate the speed of information, improving decision-making<sup>9,11</sup>.

### *Limitations*

This scoping review has limitations related to its rigor and duration, inherent to this type of review, which may lead to potential bias in identifying studies on the topic<sup>6</sup>.

### **Final considerations**

Observatories assist in decision-making by facilitating research, organizing, and providing scientific information in a fast and accessible manner. They connect companies, institutions, and universities, supporting processes and fostering interaction among managers and specialists. They function as an interactive virtual space with features designed to develop an information dynamic. The results produced by observatories arise from the exchange of information within a space that organizes valuable content capable of increasing knowledge about social frameworks, presenting information that supports decision-making among managers and promotes interventions in various contexts.

The studies demonstrate the importance of observatories for developing public policies, deepening discussions about their structure and outcomes. The use of this platform in the areas of education, culture, and the environment has shown positive value as more studies are being published in these fields of knowledge. A greater number of studies involving observatories addressing health and public policy themes was identified, highlighting the need for the creation of observatories and further research in other areas of knowledge.

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**RESUMO**

Observatórios são plataformas que há mais de 40 anos interligam, agrupam e organizam informações, mas ainda há poucas pesquisas sobre sua construção, uso e relevância. Esta revisão de escopo da literatura visa esclarecer elementos como processos, finalidade e papéis dos observatórios. Foram realizadas buscas em bases de dados eletrônicas. Dezoito estudos foram incluídos na análise, com foco em sistemas de políticas públicas de saúde, áreas específicas da saúde e sistemas de integração e vigilância tecnológica. Os observatórios podem reduzir o tempo de interpretação de dados, agilizar pesquisas e auxiliar gestores na tomada de decisões, contribuindo positivamente para os avanços tecnológicos e científicos.

**PALAVRAS-CHAVE:** Tecnologia da Informação; Sistemas de informação on-line; Elaboração de políticas.

**RESUMEN**

Los observatorios son plataformas que desde hace más de 40 años interconectan, agrupan y organizan información, pero aún hay pocas investigaciones sobre su construcción, uso y relevancia. Esta revisión de alcance de la literatura tiene como objetivo aclarar elementos como procesos, finalidad y roles de los observatorios. Se realizaron búsquedas en bases de datos electrónicas. Dieciocho estudios fueron incluidos en el análisis, con un enfoque en sistemas de políticas públicas de salud, áreas específicas de la salud y sistemas de integración y vigilancia tecnológica. Los observatorios pueden reducir el tiempo de interpretación de datos, agilizar investigaciones y ayudar a los gestores en la toma de decisiones, contribuyendo positivamente a los avances tecnológicos y científicos.

**PALABRAS CLAVE:** Tecnologías de la información; Sistemas de información en línea; Elaboración de políticas.