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Basic sanitation in small towns: contributions of sanitarian Szachna Eliasz Cynamon to health promotion

Saneamiento básico en pequeños pueblos: aportes de la sanitarista Szachna Eliasz Cynamon a la promoción de la salud

Saneamento básico em pequenas cidades: contribuições do sanitarista Szachna Eliasz Cynamon para a promoção da saúde

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Abstract

The aim was to evaluate the participation of the private initiative in the sanitation sector in municipalities with less than 50 thousand inhabitants and the importance of the model of action of the Special Public Health Service - SESP and of the sanitation actions developed by the sanitary engineer Szachna Eliasz Cynamon in these localities. This is a documentary research with content analysis, exploratory analysis of secondary data and the Mann-Whitney test was used to verify if there are significant differences in the participation of the private sector in larger municipalities. Two videos available to the public of the seminar on the environment and health were examined, as well as indicators of water supply and sanitary sewage on open consultation sites, the sanitarist collection, books and articles on the subject and normative acts. According to the test (p-value<0.05), private companies predominantly operate in larger cities in Brazil, thus, according to the content analysis, the SESP performance model and the practices advocated by Cynamon would currently encourage, sanitation solutions that could lead to environments favorable to health and the desired universalization.

Descriptors: Basic Sanitation; Privatization; Small Cities; Universalization; Health Promotion.

Resumén

El objetivo fue evaluar la participación de la iniciativa privada en el sector de saneamiento en municipios con menos de 50 mil habitantes y la importancia del modelo de actuación del Servicio Especial de Salud Pública - SESP y de las acciones de saneamiento desarrolladas por la ingeniera sanitaria Szachna Eliasz Cynamon en estas localidades. Se trata de una investigación documental con análisis de contenido, análisis exploratorio de datos secundarios y se utilizó la prueba de Mann-Whitney para verificar si existen diferencias significativas en la participación del sector privado en los municipios más grandes. Se examinaron dos videos disponibles al público del seminario sobre medio ambiente y salud, así como indicadores de abastecimiento de agua y alcantarillado sanitario en sitios de consulta abierta, la colección sanitarista, libros y artículos sobre el tema y actos normativos. De acuerdo con la prueba (p-valor<0,05), las empresas privadas operan predominantemente en las ciudades más grandes de Brasil, por lo tanto, de acuerdo con el análisis de contenido, el modelo de desempeño de SESP y las prácticas defendidas por Cynamon actualmente fomentarían soluciones de saneamiento que podrían conducir a entornos favorables a la salud ya la deseada universalización.

Descriptores: Saneamiento; Privatización; Pequeñas Ciudades; Universalización; Promoción de la Salud.

Resumo

Objetivou-se avaliar a participação da iniciativa privada no setor de saneamento em municípios com menos de 50 mil habitantes e a importância do modelo de atuação do Serviço Especial de Saúde Pública - SESP e das ações de saneamento desenvolvidas pelo engenheiro sanitarista Szachna Eliasz Cynamon nessas localidades. Trata-se de uma pesquisa documental com análise de conteúdo, análise exploratória de dados secundários e o teste de Mann-Whitney foi utilizado para verificar se há diferenças significativas na participação do setor privado em municípios maiores. Foram examinados dois vídeos disponíveis ao público do seminário sobre meio ambiente e saúde, além de indicadores de abastecimento de água e esgotamento sanitário em sítios abertos de consulta, o acervo do sanitarista, livros e artigos sobre o tema e os atos normativos. Segundo o teste (p-valor<0,05), as empresas privadas operam preponderantemente em cidades de maior porte no Brasil, assim, segundo a análise de conteúdo, o modelo de atuação do SESP e as práticas preconizadas por Cynamon fomentariam, na atualidade, soluções em saneamento que poderiam conduzir a ambientes favoráveis à saúde e à almejada universalização.

Descritores: Saneamento Básico; Privatização; Cidades Pequenas; Universalização; Promoção da Saúde.

Introduction

Sanitary engineer Szachna Eliasz Cynamon (1925-2007) – founder of the Department of Sanitation and Environmental Health (DSSA) of the Sergio Arouca National School of Public Health (ENSP), a unit of the Oswaldo Cruz Foundation (Fiocruz) and member of the Department of Sanitary Engineering (DENSP) of the Special Public Health Service (SESP), which in current legislation corresponded to the National Health Foundation (FUNASA) and extinguished on January 1, 2023 by Provisional Measure No. 1.156/23[1] – defended, even before the enactment of the Sanitation Law and the country's commitment to the Sustainable Development Goals (SDGs), a sanitary practice that would promote health and reach everyone through the observance of local peculiarities and a broad debate with the community[2].

This look at the social context of health-based sanitation has always accompanied the trajectory of the public health worker Cynamon, at SESP and later at Fiocruz, and is part of his work and actions as a whole[3,4], however, programs, research and actions – such as alternative technologies developed in sanitation workshops within the scope of SESP and directed at the context of vulnerability in small towns – were discontinued.

On the other hand, according to the estimate[5], in 2021, the Brazilian population corresponded to 213.3 million people irregularly distributed in 5,570 municipalities. Of these, 87.8%, that is, 4,893 municipalities with less than 50,000 inhabitants, with sewage service reaching only 30.5% of the population in 2019[6].

Related to the deficient issues in health care in small towns, there is also the edition of the current Sanitation Legal Framework, Law No. 14.026/20[7], which encourages regionalization, through the formation of blocks of municipalities that tendered and transferred sanitation services to the private sector, as happened with the state sanitation companies of Alagoas (CASAL), the state water and sewage company of Rio de Janeiro (CEDAE), among others, in a clear privatization movement. As Whately clarifies[8], the regulation of regionalization by the states was little discussed with the municipalities and, once again, the result of those that were concluded showed that the decision-making power remained concentrated outside the interests of small cities.

Still in this regard, water supply and sewage collection services are generally operated in a natural monopoly format, that is, when only one company offers the service. Thus, in the sanitation sector, the existence of monopolies is almost a rule, because, in view of the high investments needed to start the operation and the high return on investment time, the company, in order to be sustainable and economically efficient, needs large Scale economy[9,10].

In this way, private companies that, by their nature, aim essentially at profit would have their interests oriented to municipalities with a larger population, since, the greater the quantity of a good or service produced or provided, the tendency is for its smaller fixed cost[9,10].

Brazil's goal is to universalize sanitation, for which it is necessary to monitor the situation of sanitation in small towns[11]. For this reason, this research intends to evaluate the main Cynamon sanitary contributions in the sanitary engineering sector of the SESP, focusing on the practices that, if updated, could contribute to the planning of public policies that promote health in municipalities with less than fifty thousand inhabitants, thus fostering the desired universalization.

Methodology

This is an exploratory-descriptive study with a quali-quantitative approach, using documentary research as a procedure. As for the quantitative approach, the study analyzed the rates of water supply and sewage services in municipalities with less than fifty thousand inhabitants – thus including small and medium-sized municipalities with up to 50 thousand inhabitants[11] competence of the extinct FUNASA (Law No. 8.029/90, modified by Provisional Measure No. 1.156/23[1]) – for which public data available on open consultation sites such as the National Sanitation Information System (SNIS), the Federal Government Single Registry (CadÚnico) and the National Basic Sanitation Survey (PNSB) were examined).

For this, the Mann-Whitney test was performed to verify whether there is a significant difference in the private operation in terms of the population contingent and the percentage of the population enrolled in CadÚnico, a proxy for the proportion of low-income people in the country's municipalities.

The Mann-Whitney test made it possible to verify whether the population size and the proportion of low-income population in municipalities with water supply or sewage services provided by the private sector tend to be larger or smaller than in municipalities that are not operated. by private groups.

In the qualitative approach, a literature review was carried out together with an exploratory analysis of data obtained from the IBGE Demographic Census of water and sewage service rates in locations with less than fifty thousand inhabitants; and with Bardin's thematic or categorical content analysis[12], to identify the main actions that could contribute to the sanitation sector and to the promotion of health today.

For AC, open data collected from two videos, available at the links: www.youtu.be/_9F-sFuQfUQ and www.youtu.be/D3ZdZe3n-dw, collected from the seminar held by the Department of Sanitation and Environmental Health of the School were analyzed. Nacional de Saúde Pública/Fiocruz, on June 13, 2022, entitled "Rio+20+10: Environment and Health in the Spotlight", table: "Water and Sanitation in the 2030 Agenda".

As for the document analysis, it should be noted that the sanitarian's collection is dispersed, part of it in the Archive and Documentation Department of Casa Oswaldo Cruz (DAD/COC); another at ENSP's Sanitation and Environmental Health Department (DSSA); in the FUNASA archives and kept with the family. Thus, for the selection of articles that were part of the research, the following sources

of information were chosen: Virtual Health Library (VHL), Scientific Electronic Library Online (SciELO), Spanish Bibliographic Index of Health Sciences (IBECS), Cochrane Library, Index Scientific and Technical Literature of Latin America and the Caribbean (LILACS), National Library of Medicine/National Institutes of Health (PubMed), MedLine, Periódico Capes and Google Scholar. In turn, for document analysis, normative instruments were consulted, reports issued by technicians at the time of the SESP, personal documents of the sanitarista and the annals of congresses in which the sanitarista participated, with the purpose of clarifying the proposed concepts and ideas[13] by Cynamon.

Regarding to content analysis, the panel "Water and Sanitation in the 2030 Agenda" was composed of specialists from the sanitation sector – technicians, FUNASA employees and former students of the sanitarian Cynamon – who related the current sanitary reality to the main contributions of SESP/FUNASA and the legacy of public health worker Cynamon. The tables were coordinated by Dr. Débora Cynamon Kligerman, from the Department of Sanitation and Environmental Health at ENSP/FIOCRUZ. In the morning, with the theme Water and Sanitation in the 2030 Agenda, doctoral students Silvia Maria Pinheiro Bonini and Fátima de Carvalho Madeira Reis participated with the theme: Programs and public policies in sanitation.

Afterwards, Dr. Marcos Roberto Muffareg, president of the Institute of Engineering and Architecture, with the subject: From SESP to FUNASA: investment, planning and elaboration of projects in sanitation. And at the end of the morning, Dr. Alexandre Pessoa Dias, professor-researcher at the laboratory of professional education in health surveillance at the Polytechnic School of Health Joaquim Venâncio, with the topics: Rural sanitation, rural sanitation policies and programs; Relationship between SESP and rural sanitation; Importance and reverberations of SESP and Cynamon for past and current public health programs and policies. In the afternoon, the seminar had as its main subject: Training in Sanitation, with the participation of specialists from FUNASA and former students of the sanitary specialist Cynamon: Luiz Gomes Ferreira Júnior, sanitary engineer of the Ministry of Health, with the theme: The importance by SESP and the sanitarian Cynamon for the training/qualification of the sanitary engineer.

Mr. Geraldo Sales Chã Filho, civil engineer and member of Funasa's working group who spoke on the topics: From SESP to Funasa: Contributions of sanitation workshops to the training of sanitary engineers; Participation and contribution of SESP and the sanitary engineer Cynamon for and in the sanitation workshops. And finally, Dr. Rainier Pedraça de Azevedo, civil engineer and president of the Brazilian Association of Sanitary Engineering of Amazonas, who addressed the subjects: Contributions of sanitation manuals to engineer training; From SESP to Funasa: analysis of editions and revisions over the years. Participation and contribution of the sanitary engineer Cynamon to the sanitation manuals. Importance of the sanitary guard manual.

After transcribing the videos with the seminar lectures, available on the YouTube© platform, the three stages were carried out, as provided in the method proposed by Bardin[12], for categorical analysis of the content in order to systematize the perception of the subjects about the main actions of the SESP and the Cynamon public health professional which, if updated, could contribute to sanitation, and, consequently, to the promotion of health and the universalization of services in municipalities with less than 50 thousand inhabitants.

The pre-analysis of the collected corpus corresponded to four stages, in the first one a floating reading of the speeches was carried out, whose instrument was the transcripts of the lectures; then, the documents for analysis were chosen, selecting the lectures of the five specialists in the sanitation sector and the final debate, excluding the speeches of the head of the department, the coordinator of the panel and the two participating doctoral students. - to group the regularities and divergences about the objective of the research; afterwards, the recording units of the interviewees' speeches and the number of recurrence of words were formulated (Chart 1).

Continuing, the process of exploring the material was carried out, a stage that consisted of deepening the study, guided by hypotheses and theoretical references, in order, in line with Bardin[12], initial categories were created through coding and categorization of results. The strategy used was the recurrence of words and terms from the seminar lectures, with the registration units as guiding elements (Chart 2).

Thus, in view of the objective and hypotheses of this article, the following categories were listed: positive and negative perception of the main actions of SESP and the public health worker Cynamon; actions that could contribute to universalization; and the impact of the privatization forecast on the current legal framework for universalization.

Finally, after grouping the initial categories, the results were treated, seeking to interpret the collected content and, thus, according to Bardin[12:41], promote a "logical operation, by which a proposition is admitted by virtue of its connection with other propositions already accepted as true". Therefore, the intermediate categories were formulated through the conceptual description according to the interpretation of the seminar content, describing them conceptually (Chart 3).

And, from the set of categories found and analyzed, the final category was reached, composed of the grouping of the intermediate category and the set of concepts.

Chart 1. Units for recording the speeches of speakers. Rio de Janeiro, RJ, Brazil, 2022

Recording unit	Recurrence
Privatization	3
SESP/FSESP/FUNASA	45
Sanitation and health	9

Social technology	12
Technical concessions	2
Sanitation workshop	12
Sanitation manuals	15
Qualification/ training of professionals	48
Cynamon Legacy	9
Sanitation legal framework	7
Universalization	10
Management	5
Regulation/ regulatory agency	8
Health education	6

Chart 2. Initial categories. Rio de Janeiro, RJ, Brazil, 2022

	Initial categories
1.	Perception of the main actions of the SESP and the public health worker Cynamon
2.	Actions that could contribute to universalization
3.	Impact of the privatization forecast on the current legal framework for universalization

Chart 3. Intermediate categories. Rio de Janeiro, RJ, Brazil, 2022

Initial categories	Subcategory	Guiding concept	Intermediate category
1. Perception of the main actions of the SESP and the public health worker Cynamon	Not applicable	Among the main actions promoted by SESP and by the sanitarian Cynamon, the relationship between sanitation and health appears with more recurrence; the training of higher-level professionals and the training of community agents; health education; the sanitation workshops for testing alternative technologies by sanitary assistants and inspectors and the manuals as a result of these workshops. According to specialists, for sanitarians, "when you create a critical mass of professionals, you manage to change the mercantilist view of sanitation".	1. Sanitary actions undertaken by SESP and by the sanitarian Cynamon as instruments capable of serving municipalities with less than 50 thousand inhabitants.
2. Actions that could contribute to universalization	Positive perception	Among the main contributions, it can be seen that the training courses and training of professionals implemented by the SESP and in which sanitarians participated as professors in sanitation workshops represent, according to specialists, the greatest contribution of SESP and sanitarians. Through health education and sanitation workshops, alternative technologies were tested to solve the health problem within the context of the community.	2. Training courses for health professionals, sanitation workshops and health education as actions that could currently contribute to the universalization of sanitation.
	Negative perception	The SESP period manuals, as a result of the sanitation workshops and basic sanitation actions guide, although mentioned recurrently, according to the specialists, would not have the same function as in the SESP period, serving only as bibliographic material.	2. Sanitation manuals as a bibliographic reference.
3. Impact of the privatization forecast on the current legal framework for universalization	Negative perception	Privatization already existed, the legal framework only changed some rules, such as the need for bidding. In this way, the problem for universalization is not privatization, but the lack of regulation and management.	3. Need for supervision in the provision of sanitation services, whether public or private.
	Negative perception	According to experts, small municipalities "are not within the appetite for privatization", thus making it difficult to universalize.	3. Lack of interest from the private sector in municipalities with less than 50,000 inhabitants.

According to the intermediate categories listed (Chart 3), the relevance of sanitation actions undertaken by the sanitarian Cynamon at SESP can be verified. Thus, after aggregating the categories, the final category is reached, inferring that health education actions, training and training of professionals and testing of alternative technologies in sanitation workshops, if updated, would be able to contribute to health care in small towns and achieve universalization. Please inform that, for the categorical analysis of the content, the data were processed by hand.

In accordance with the Resolution of the National Health Council No. 466/2012, this research was registered on the Brazil Platform, and the study was submitted and approved by the Research Ethics Committee of the Sergio Arouca National School of Public Health/ Oswaldo Cruz Foundation, Opinion 4,964,256. It is clarified that the raw data of the CA were collected in an open, free and freely accessible virtual environment, however, the participants assigned, verbally and through recording, their copyright.

Results and Discussion

In this part of the article, the results will be presented, for which two videos available to the public of the thematic seminar on environment and health were examined, in addition to indicators of water supply and sanitary sewage, based on data available on open consultation sites such as National Sanitation Information System (SNIS), Federal Government Single Registry (CadÚnico) and the National Basic Sanitation Survey (PNSB), the sanitarist collection, five articles, seven books, two academic works and ten normative acts.

Sanitarian Cynamon, at SESP and beyond, through technical, human and social actions, sought to improve sanitation, especially access to drinking water and sewage, for people in vulnerable situations. For the sanitarista, even coming from a time when the preventive conception of basic sanitation was favored – which associates sanitation with a set of preventive actions of sanitary engineering – sanitation would not only be the prevention of diseases, but one of the social determinants of health. most important health, since it leads to quality of life[14], recognized as a fundamental right, inherent to human dignity, and promoter of health.

In this regard, the SESP had as its principle the training and qualification of personnel, mainly its higher-level employees, such as doctors and sanitary engineers, who joined the Service and were assigned to the administrative units that served the interior of Brazil to, together, find solutions to the sanitation problem[15]. Thus, according to Muffareg, (verbal information, 2022), this interdisciplinarity that took place through intersectionality allowed the voices of the territories to be "heard". It should be noted that the aforementioned intersectoriality, within the scope of health promotion, "emerges as a natural consequence of the displacement of the issue of health to the center of discussions on the process of social development"[14:81]. In this way, the SESP model of action and the sanitary practices advocated by the sanitarist Cynamon, long before the discussion on prevention versus health promotion, proposed policies and actions that went beyond these sectorized and welfare views.

In this way, "In order to update and enrich – and not replace – the preventive conception of sanitation, one can make use of the theoretical framework of health promotion"[14:73], making "the sense of 'health' that we want to promote more expensive"[16:26] to leverage the processes of solving the sanitary problems found, mainly, in small localities, because, "instead of the search for definitive 'solutions' or simply technological implementations [...], basic sanitation must be conceived and executed [...] observing other concepts"[14:75].

It is worth highlighting briefly the characterization of health promotion. The term refers to actions, to the social determinants of health, which aim to provide quality of life. Therefore, to improve the health conditions of a population, social policies aimed at the ideals of health education, citizenship, that is, the "construction of healthy public policies" would be necessary"[14:77], including health awareness actions. Likewise, the Ottawa Charter, a valuable document that guides health promotion and elaborated at the International Health Conference in Canada, recommends that health is a positive concept and that it should have priority over all sectors and levels. Thus, the responsibilities for health promotion must be shared, including among individuals, since it is up to society, the community, to establish its health protection system in pursuit of social justice and equity[14,18,19].

Sanitarian Cynamon, long before the release of the Ottawa Charter, conceived sanitation as health and health as promotion, since, for him, health should be present as an object in all public policies. Thus, in his practices, he sought to identify the causes of social inequality and undertook sanitation actions linked to the economic, political, social and cultural strengthening of the community, as observed in projects such as the Open University[3], with the community around Fiocruz. This action was an instrument to promote social justice, solidarity, create opportunities to generate work and income and improve the quality of life of the population.

Basic sanitation in the Brazilian scenario

The Constitution of the Republic guarantees the right to health and a balanced environment, the first as a social right and the second as a right for all, thus conferring a guarantee related to the exercise of citizenship. Thus, in order to comply with the constitutional precept, some efforts have been made to promote and guarantee access to basic sanitation for the entire population of the territory, but the current health situation, due to the precariousness, the low quality of life in some localities and the environmental unhealthiness[14], still looks challenging.

As mentioned, regional differences between municipalities are very pronounced when it comes to basic sanitation, mainly related to water and sewage. According to SNIS data from 2019[6], almost half of the population, 49.1%, lives in locations with a sewage treatment rate below the national average. In addition, the North and Northeast regions have the worst service indicators, below the national average for both water and sewage (Table 1).

In addition to the regional difference, the size of cities and the vulnerability of their inhabitants also impose more difficulties in expanding access to basic sanitation. Recent data from 2020 indicate that, according to population size, in cities with more than 50,000 inhabitants, about 90.4% of residents have water supply through the network and 65.5% have sewage collection through the network. On the other hand, in cities with less than fifty thousand inhabitants, sewage service reaches only 30.5% of

residents. Therefore, when establishing a temporal evaluation of the total water and sewage service rates, it is observed that there was an improvement, however, comparing the service by population size, it is verified that the small cities, mainly, in terms of with regard to sanitary sewage by network, are far short of the desired universalization[6].

Table 1. Regional indicators of water and sewage service. Rio de Janeiro, RJ, Brazil, 2019

Region	Mains water supply	Sewerage by network
North	57.5%	12.3%
North East	73,9%	28,3%
Southeast	91,1%	79,5%
South	90,5%	46,3%
Midwest	89,7%	57,7%
Brazil	83,7%	54,1%

Source: SNIS[6].

In addition, solutions such as municipal health consortia – joint investment by municipalities to carry out health actions – have limitations for municipalities with less than fifty thousand inhabitants, due to the difficulty of financial, human and management resources[18].

Given the situation presented, remedying or, at least, reducing this abysmal health deficit in the country has always been present on the agenda of the main political demands. In this way, Brazil assumed, through Decree No. 8.892/16[19], the commitment to implement the 2030 Agenda, the SDGs and, thus, guarantee universal access to basic sanitation.

The challenges to universalization

With regard to the universalization of basic sanitation, in 2000, the UN began a process of global debate on issues related to human needs and, through the United Nations Millennium Declaration, unanimously adopted by the 191 member states and society civil society, a document was formulated constituting the Millennium Development Goals, determining a series of actions that should be achieved, by 2015, to eliminate poverty and hunger in the world. MDG 7, "Ensure environmental sustainability", proposed four goals aimed at: guaranteeing quality of life and respect for the environment, reversing the loss of environmental resources, reducing the percentage of the population without access to drinking water and basic sanitation and, by 2020, achieve an improvement in the quality of life of inhabitants living in degraded areas around the world.

As the term established in the MDGs approached, in 2012, the United Nations Conference on Sustainable Development (Rio+20) was held, initiating negotiations to create a new set of objectives, the 2030 Agenda. Seventeen Sustainable Development Goals (SDGs) were formulated, a sustainability agenda, valid for fifteen years, whose sixth objective aimed to "Ensure the availability and sustainable management of water and sanitation for all", defining, for this, six goals, among them: achieving universal and equitable access to safe and potable water for all and access to adequate and equitable sanitation and hygiene for all[20]. As a signatory, Brazil assumed the commitment to implement the 2030 Agenda and, for that, created the National Commission for the Sustainable Development Goals.

Approaching 2030, the concern with the deficit in sanitation and with the desired universalization is justified, because, according to the last Demographic Census[21], only 55.5% of Brazilian municipalities have sewage or stormwater sewage services. In addition, the economic instrument of social policy to ensure universal access to basic sanitation, subsidies - assistance of a financial, credit or tax nature, which aims to encourage economic activity and reduce inequalities - in locations where tariffs are charged or fee for the respective services, were present in 72.6% (3,783) of the municipalities with water supply; and in 67.8% (1,387) of those with sewage. However, as one of the most common criteria for granting the subsidy was enrollment in government social programs[22], it is observed that these instruments are not effective in locations where there is no sanitation service, indicating that investments in alternative solutions that are adaptable to the reality of the location, as advocated by the sanitarian Cynamon, would still be the best solution to achieve universality , as the lack of financial autonomy and the technical incapacity of municipalities, especially those with less than 50,000 inhabitants, makes them technically and financially dependent on the Union and, thus, devoid of basic sanitation infrastructure, either due to lack of resources or due to management inability[2].

It should be noted that the "progressive expansion of access to basic sanitation for all occupied households" (Art. 3. Item III of Law No. 11,445, of January 5, 2007[23]) considers all municipalities, regardless of their condition and size, whether urban, peri-urban, rural or even irregular. For this, the National Rural Sanitation Program (PNSR) observes the different realities of rural organization in Brazil and the National Basic Sanitation Plan (Plansab) establishes goals, guidelines and actions related to sanitation, in order to achieve the desired universality for four basic sanitation services, drinking water supply, sanitary sewage, urban cleaning and solid waste management and drainage and management of urban rainwater. However, despite the legal provision, the indicators are not encouraging, because, until 2010, although 82.9% of households where the Brazilian population resided had regular water supply, 72.2% of rural

households did not have access to the network water general[24].

This unpredicted scenario corroborates the analysis of the sanitarian Cynamon, mainly, during his technical phase, initiated by SESP, when he spoke about the dominant and predominant social, structural and political inequalities in the field of basic sanitation in small towns[25]. Clarifies Kligerman[3], in relation to local services, the SESP valued, among other procedures, knowledge of the real conditions of health problems through the application of an instrument, the health survey, carried out every five years, which guided the specific actions of the sector. For this, SESP's actions were based on a tripod: technical concessions, aiming to simplify technical norms and include smaller municipalities; sanitation workshops, places for training and experimenting with technologies adaptable to the local reality; and sanitation manuals, training and qualification guides for technical personnel – sanitary guards, sanitary visitors and sanitation assistants – to work with the community and verify the sanitation conditions in the dwellings.

The Special Public Health Service and the Cynamon sanitarist: contributions and reverberations

Sesp was implemented in 1942 linked to US economic and political interests that influenced Latin America at the time and, due to this interventionist relationship, its historicity was permeated with questions. However, with regard to sanitary practices, which were initially aimed at controlling diseases that threatened the maintenance of the workforce in regions of military interest, SESP valued, among other procedures, knowledge of the real conditions of sanitary problems in small towns[3].

Despite having been originally designed as a temporary agency with bellicose objectives, the expansion of the SESP strengthened the Brazilian state by expanding public health promotion for rural populations, often isolated in the interior of Brazil, since the presence of representatives of the SESP made public power present in these regions[26]. In order to deal with this reality, even in the first years of its existence, in 1944, a Health Education Division was created, responsible for both the training of health educators (health professionals, engineers and assistants) and for educational activities with the community[15].

In this process, health guards and health visitors were highlighted for their direct and permanent contact with the community, enlisted among the residents. In this way, the SESP included health education and social participation as part of the cultural routine of the population[27], currently dialoguing with the National Health Promotion Policy, which provides that the exercise of citizenship implies the creation of mechanisms for mobilization and social participation[14,15,28]. It urges to clarify that the SESP was a pioneer in the qualification of professionals for public health work and one of these employees was the sanitary engineer Szachna Eliasz Cynamon, who joined the institution in 1952 and was effectively an employee until 1978, but, since 1960, was assigned to Fiocruz, where it implemented the Sanitation Department in 1965[3].

At SESP, numerous experiments were carried out with new types of materials suited to the local and environmental reality. In this way, the Service developed science and technology and, at the same time, respected the local reality, granting citizenship to the most vulnerable population. According to Chã (verbal information, 2022), Cynamon, like a man of his time, always proclaimed that the best sanitary solutions occurred at the local level, through sanitary education and the use of appropriate and tested technologies in the sanitation shed and workshops of sanitation with the participation of local society.

Thus, as clarified by Kligerman[3], at SESP there was a tripod of action in the municipalities where it operated: the sanitation workshops, real training "nursery" for testing technologies adapted to the local reality before going to the field; sanitation manuals, training guides aimed at SESP employees to guide sanitary actions; and technical concessions, i.e., flexibility of technical norms and investment processes in the sector, since small locations did not have specialized technical staff and resources.

The Sanitation Workshops were conceived and carried out with the objective of developing low-cost technologies for health units. Many were the alternative technologies developed by the students of the sanitarist Cynamon found in his work: amazon well for a source of water supply for small supplies; dynamic filter, such as capture for small communities; fast upflow filter; coconut fiber and rice husk filter; slow upflow filter; use of national fluorite, for water fluoridation; use of flexible hose as tubing in tube wells; use of magnetic material in water treatment to replace aluminum sulfate; practical device to control water loss in public taps; use of porous concrete for construction of filtering walls; local manufacture of rice husk cement for building sanitation facilities and improving housing; use of natural limestone to correct the pH of the water; toilets using bamboo as reinforcement for concrete slabs, clay blocks and rice husks for walls and tiles made from palm tree trunks; unconventional, simplified system, with small diameter pipes; use of treated sewage effluent for subsurface irrigation, among others[3,29]. Author[30] highlights the role of the public health worker in the SESP training workshops, which, for him, would correspond to a true social technology. In the same sense, Chã (verbal information, 2022), points out that these workshops were responsible for countless sanitary and housing improvements.

From the 1960s onwards, with the change in the structure of the SESP – which became a foundation linked to the Ministry of Health (FSESP) – with the scarcity of resources for investment in sanitation and with the greater demand for technical standards that raised the cost of works, mainly for small cities, it was essential that technical bodies guide city halls and local leaders in carrying out the review of technical procedures for cost reduction, but at the same time, maintain the technical quality in the systems[3]. Thus, based on his experience in the workshops, Cynamon suggested a procedure that he called Technical Concession Systems. It is noteworthy that, based on the concessions, which involved economic, execution, administrative and operating assumptions, Cynamon developed more

simplified non-conventional exhaustion systems[31]. Some suggestions for technical concessions were published in congress annals, such as Suggestions for Provisional Norms for the Elaboration and Presentation of Projects for Small Water Supply Systems, presented at the IV Brazilian Congress of Sanitary Engineering, in Brasília, in 1967; and the System of Technical Concessions for the Collection and Treatment of Liquid Waste from Small Collectivities, presented at the IX Congress of Sanitary Engineering, in Belo Horizonte, in 1977. artificial sandstone, nicknamed the Mexican filter, using clay instead of stone from the São Francisco River, thus reducing costs[3].

With regard to sanitation manuals, chronologically, the first edition, called sanitary guard manual, was published by SESP in 1944 and, according to a study[32], it was designed with the aim of serving as didactic material for training courses for health guards, so that each course promoted by SESP had a standard manual that was improved according to local needs. In the 1964 version, prepared by the Technical Guidance Division, headed by the sanitary specialist Cynamon, the engineer had a central role, as he carried out a complete revision of the previous manuals. By reading the 1964 manual, with the participation of the sanitarian, one can see the breadth of the concept of health, considered by the sanitarist Cynamon as a fundamental condition for social development. The strategies foreseen in the manual included, from actions inside the houses, with the effective involvement of the population, through teaching, education and carrying out improvements in their homes and forms of personal hygiene; to caring for the city and the environment, involving all social actors. In addition, it encouraged the installation of the Autonomous Water and Sewage Service (SAAE), a municipal authority with administrative, technical and financial autonomy; the collection, transport and final destination of garbage (solid waste) and also for including the collection and transport and final destination of solid waste together with the control of insects and rodents.

In addition to the technical importance of SESP and Cynamon, a public health professional, demonstrated above, another extremely relevant aspect for Brazilian basic sanitation was the variations in the form of management that, throughout history, ranged from authoritarian centralism to redemocratization, passing through processes of centralization and decentralization of public policies and the different definitions of the role of managers at each federative level. Among these processes, in a certain historical period, the SESP was a model of state intervention that collaborated with the development of small towns, acting, from the perspective of public health, in sanitation, housing and appropriate technologies[30]. However, the alteration of the Sanitation Legal Framework, as well as the extinction of FUNASA, successor to SESP and responsible for municipalities with less than 50,000 inhabitants, in addition to indigenous and quilombola communities, generates insecurities and questions.

Law No. 14,026/20 and the participation of the private sector regarding population size

With the recent change in the legal framework, which establishes national guidelines for basic sanitation, the law now requires bidding and is based on the perspective that greater participation of private agents in the basic sanitation system would be able to contribute to the necessary investments. for the universalization of this service for the Brazilian population[33]. However, this alteration brought up the discussion about the provision of sanitation services among small municipalities and where there is no interest from private companies, whose main and legitimate purpose is profit.

Table 2. Information selected by type of water supply and/or sewage service provider. Rio de Janeiro, RJ, Brazil, 2017

Type of water supply and/or sewage service provider	Number and Percentage of Municipalities by Population Size				Population Estimate		Population Average	Average Population Enrolled in the Single Registry	Average percentage of population enrolled in the Single Registry in relation to the estimated population in 2017
	Below 50 thousand inhabitants	%	Over 50 thousand inhabitants	%	Total	%			
NOT PRIVATE	4203	85.7	528	79,4	171241038	82.5	36196	12969	34.5
PRIVATE	702	14.3	137	20,6	36419891	17.5	43409	16994	38.7
TOTAL	4905	100.0	665	100.0	207660929	100.0			

According to the table, the private initiative was present in 839 municipalities in the country, serving 17.5% of the population, around 37 million people in 2017[22]. Among the municipalities with less than 50,000 inhabitants, the private sector operates in 14.3% of them, while providing services to approximately 20.6% of the larger municipalities, that is, those with more than 50,000 inhabitants. The average population contingent in municipalities served by the private sector is greater than in other municipalities in the country. On the other hand, the average percentage of population enrolled in CadÚnico is higher in municipalities with private sector sanitation service providers. Thus, the null hypothesis considered for the Mann-Whitney test was H_0: Is the population distribution the same for municipalities with private activities and other Brazilian municipalities? By rejecting the null hypothesis, it is inferred that the distributions are different, indicating that there is a significant difference between the population size in the set of municipalities operated by the private sector, compared to the group of municipalities in which this condition was not established in 2017.

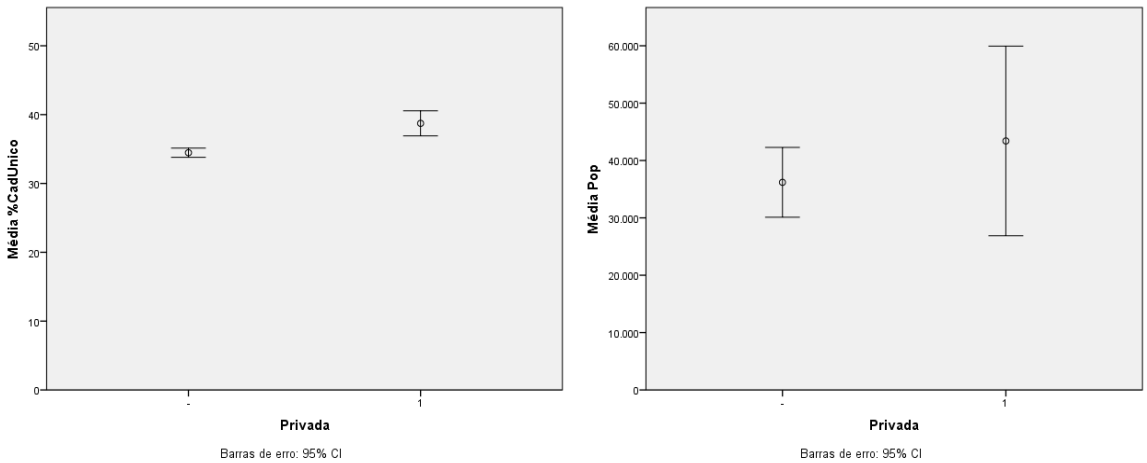
A test was also carried out for the distribution of the percentage of population enrolled in the Cadastro Único and the hypothesis of equivalent distributions was also rejected, indicating that in municipalities where the private sector operates, the proportion of low-income population is greater than in other municipalities. In larger municipalities, disorderly urbanization may be related to a higher proportion of low-income population. Favelization, for example, is a consequence of urban swelling and disorderly occupation of cities[34].

Chart 4. Results of the Mann-Whitney statistical test for comparing the set of municipalities with private provision of water supply and/or sewage services and the other municipalities in the country, with the respective box-plot of population distribution and the percentage of registered in CadÚnico. Rio de Janeiro, RJ, Brazil, 2017

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pop is the same across categories of Privada.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
2	The distribution of %CadUnico is the same across categories of Privada.	Independent-Samples Mann-Whitney U Test	,002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.



Final Considerations

As observed throughout the text, health should not be seen as a consumer good, but as a fundamental human right, but a considerable part of the Brazilian population does not have access to basic sanitation services in a safe way and another does not even make up the official data for residing in small towns, in rural areas or outside the concession areas of companies providing these services and, mainly, private companies, which, according to the test (p-value<0.05), predominantly operate in larger cities in Brazil.

In addition, the content analysis, although it found limiting elements, such as digression or subjective deferences to the theme, the presentation of a specific interest in an item or the influence of other participants or the audience, indicated that the SESP model of action and the practices advocated by Cynamon, mainly in the field of health education and professional training, would currently foster sanitation solutions that could lead to environments favorable to health and the desired universalization.

The economic and social inequalities of Brazilian municipalities related to the provision of sanitation services, especially those with less than fifty thousand inhabitants, who do not have budgetary resources or technical capacity, reinforce the need to promote actions, both in the area of health and also in the social scope, which eliminate the social debt with the universalization of access.

In this sense, the SESP model of action and the actions of the sanitarista Cynamon for the Brazilian basic sanitation – such as the valorization of the protagonism of the municipal management, the participation of the civil society in the sanitary question, the formation and qualification of personnel, the multisectoral integration and

multidisciplinary approach, the formulation of alternative sanitation technologies adaptable to local peculiarities, the economic strengthening of the community, the testing of simplified technological models in sanitation workshops, environmental and health education, among others - would represent intervention actions and social interaction that dialogue with the goals and principles of health promotion capable of promoting universal access to basic sanitation.

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