

# Efficiency in public health: the trajectory of a concept from engineering

## *Eficiência em saúde pública: a trajetória de um conceito proveniente da engenharia*

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**ABSTRACT** This article aims to describe the development trajectory of the concept of efficiency in public administration, more specifically in the area of public health. To achieve this objective, a theoretical essay was carried out, in which a theoretical-analytical argument was developed to guide empirical research in relation to the issue of efficiency in health management. This argument is based on three assumptions: over a century of development of the concept of efficiency in public administration, this concept is still heavily loaded with assumptions from engineering; these assumptions, in turn, are directly connected with principles of neoclassical economics, which underlie neoliberal perspectives applied to public management; and in the health area, the concept of efficiency based only on market economy assumptions is insufficient, needing to be articulated with the concepts of efficacy and effectiveness.

**KEYWORDS** Efficiency. Public administration. Health management.

**RESUMO** A temática mais geral desta pesquisa diz respeito à eficiência na administração pública e sua manifestação na saúde pública. Em um contexto neoliberal, marcado por políticas de austeridade, em que as restrições orçamentárias em relação às políticas sociais são um dos aspectos principais, a análise sobre o que significa eficiência torna-se uma questão de pesquisa relevante. As diferentes ideias sobre eficiência, constituídas e modificadas ao longo da história, exercem influência na gestão dos recursos públicos. Neste sentido, este artigo tem como objetivo descrever a trajetória de desenvolvimento do conceito de eficiência na administração pública, mais especificamente na área de saúde pública. Para alcançar este objetivo, foi realizado um ensaio teórico, no qual desenvolve-se um argumento teórico-analítico destinado a orientar pesquisas empíricas em relação ao tema da eficiência na gestão em saúde. Este argumento é baseado em três pressupostos: ao longo de um século de desenvolvimento do conceito de eficiência na administração pública, este conceito ainda é fortemente carregado de pressupostos oriundos da engenharia; esses pressupostos, por sua vez, se conectam diretamente com princípios da economia neoclássica, que estão na base de perspectivas neoliberais aplicadas à gestão pública; e na área da saúde, o conceito de eficiência fundado apenas em pressupostos da economia de mercado é insuficiente, necessitando ser articulado aos conceitos de eficácia e efetividade.

**PALAVRAS-CHAVE** Eficiência. Administração pública. Gestão em saúde.

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## Introduction

The most general theme of this study concerns the trajectory of the concept of efficiency in Administration and its consequences in public management, more specifically in health management. It is a concept that has gained increasing space in the public arena and a prominent role in the evaluation of public policies. According to Jannuzzi<sup>1</sup>, efficiency has been favored to the detriment of other constitutive elements in the evaluation process of public and social policies. This prominence was defined by the author as ‘efficiencism’, a criterion that takes efficiency as a priority and preference over any other public value, a highlight repeatedly justified by the need to adapt public policies to fiscal policy<sup>1</sup>.

The financial and budgetary crisis of national health systems, in many cases accentuated by the COVID-19 pandemic, deepens aspects related to health management and intensifies the dispute for public funds at all levels of health care. In this context, efficiency has been raised as necessary to optimize the use of resources to face the crisis. It should be noted that the emphasis on the debate on efficiency, in a neoliberal context, is accompanied by proposals to reduce the State, as the governmental apparatus is accused of inefficiency. In view of this, the solutions presented emphasize the need to seek efficiency, with regard to the use of public resources, in the same way of the private sphere, or even in it with privatizations, outsourcing and public-private partnerships.

The debate on efficiency in public management was approached from different perspectives and positions. So much so that throughout the 20th century, an understanding prevailed that linked the notion of efficiency to planning by government agencies, in the sense of promoting public policies on a large scale. Implementing bureaucracies, with training and qualification,

would be responsible for achieving levels of efficiency in government actions capable of meeting societal demands. However, given the post-war crisis of the so-called Keynesian consensus and the arrival of Margareth Thatcher and Ronald Reagan, respectively in the UK and US governments (1979 and 1980), the rise of an ideology that highlighted the inefficiency of governments to satisfactorily meet the demands of the populations was enshrined. From that period onwards, the notion of efficiency came to be seen predominantly as a fiscal issue<sup>2</sup>.

In a neoliberal context, marked by austerity policies, in which budget restrictions in relation to social policies are one of the main aspects, the analysis of what efficiency means becomes a relevant research question. The literature has shown that what is meant by efficiency in Public Administration has historically been the subject of dispute. According to O’Keeffe<sup>3(20)</sup>, “political discourses often cite efficiency as a primary ambition of policy, but use this term loosely”. In this sense, this essay seeks to answer the following research problem: what is the trajectory of efficiency in public administration and its consequences for the area of public health?

Given the above, the aim of this paper is to describe the trajectory of development of the concept of efficiency in public administration and its consequences in the area of public health. In this work, a theoretical-analytical argument is developed to guide empirical research in relation to the theme: efficiency in health management. This argument is based on three assumptions: (1) over a century of development of the concept of efficiency in public administration, this concept is still heavily laden with assumptions from engineering; (2) these assumptions, in turn, are directly connected with principles of neoclassical economics, which are at the base of neoliberal perspectives applied to public management; and (3) in

the health area, the concept of efficiency based only on neoliberal assumptions is insufficient, needing to be articulated with the concepts of efficacy and effectiveness.

In this sense, it is an argument in favor of a complex perspective of the concept of efficiency, going beyond the exclusive logic of the market. In this way, an approach of efficiency to public health becomes possible, one that is capable of meeting public demands in complex societies. This was clear in the recent episode of the COVID-19 pandemic, when the role of public governance in health management became evident<sup>4</sup>.

In order to reach this result, an essay was carried out based on bibliographic sources and public documents. The essay conception adopted is the one described by Meneguetti<sup>5(323)</sup>, according to which “the essay does not require a specific system or model, since its principle is in the reflections in relation to the systems or models themselves”. Bearing in mind that this is the historical presentation of a concept, it is emphasized that this work was developed from the conception that every concept is constituted and modified from the contexts in which it is inserted<sup>6</sup>. In this sense, data sources were sought that would allow finding the use of the term efficiency, from its emergence to its incorporation in health management. In view of the magnitude of these events, it was decided to carry out an extract from the main elements that constitute these contexts.

To this end, this work is divided into four sections, in addition to this introduction: the first of them addresses the incorporation of an engineering concept by disciplines of the social sciences, such as Administration and Economics; the second section explores the presence of the concept of efficiency in Public Administration, which has occurred since its formation as an area of study; the third section highlights the issue of efficiency applied in health management, with a focus on public health. Finally, the last section presents the final considerations.

## Efficiency in administration: the influence of engine engineering

In the literature, the discussion about the meaning of efficiency and its application in administration is quite wide. Callender and Johnston<sup>7</sup> point out that the word efficiency has many meanings and the very understanding of the term depends on the way it is used, whether in different languages or different disciplines. As for the linguistic aspect, the meaning of the term in British English is not the same as in the United States or even in the French language. According to the authors, in British English the term designates adequate performance, while in the United States and France it indicates a specific standard of performance. With regard to the application of the term in different disciplines, it is possible to perceive it in areas such as philosophy, engineering, accounting, economics, among others. In management, the term was influenced by philosophy, economics and engineering.

Despite this range, some authors bring together two main meanings: one with roots in philosophy and the other in engineering<sup>8,9</sup>. The philosophical definition of efficiency comprises the notion of force, energy or cause, an understanding which origin is found in Aristotelian philosophy. Aristotle's concept of efficiency derives from his work on the nature of knowledge and, as such, is part of the history of the philosophy of science. More specifically, the concept employed is that of efficient cause and composes the theory of causality developed by the philosopher. The ‘efficient cause’ concern is what originates the change: the altering agent that promotes the transformation and, in turn, precedes the effect<sup>8</sup>.

Even though this first understanding exists, with the advent of the steam engine and the

development of machinery for industrial production, efficiency began to characterize the productive potential of engines. This understanding was originally employed in engine engineering by Rankine, an engineer who used the term to designate the relationship between what the engine receives as heat and the useful work it performs<sup>8,10,11</sup>. The concept of efficiency that arises around machines, as a way of optimizing their capabilities, is transposed to interpersonal relationships in the industry<sup>8,10,11</sup>.

In administration, efficiency played a prominent role in the first half of the 20th century: the increase in efficiency, whether of workers or machinery, was related to the development of ways of working focused on the production process<sup>12,13</sup>. During this period, measuring and controlling human action so that production parameters could be established became an important factor. According to Marques and Lopes<sup>11(94)</sup>, the “maximization of individual utility becomes not just a means, but a value in itself”. This normative understanding of efficiency is most evidently introduced into industry by Frederick Taylor.

Thus, the contemporary definition of efficiency mainly comprises a calculation aimed at optimizing the means in relation to the ends. According to Rutgers and van der Meer<sup>8</sup>, throughout history, the notion of efficiency derived from engineering became predominant, without, however, losing assumptions of the exact sciences. The incorporation of this as one of the main concepts of administration comprises three main axes: the rationalization process in the modern West; the rational organization of work; and the notion of *homo economicus*. From this, it is possible to understand the presence of a certain conception of efficiency, which still, as highlighted in the sequence of the text, remains present.

Unlike what happened in other parts of the world, the modern West has gone through a specific rationalization process, which is

Result of the influence of the Protestant worldview on Western culture, with its practical ethics (asceticism) and its orientation towards the world through methodical and rational work<sup>14(578)</sup>.

Man’s relationship with the world is transformed as nature, other individuals and subjectivity itself are placed at the disposal of human will<sup>14</sup>.

Sell<sup>14</sup> shows that the process of rationalization in Weber can be understood at three levels: individual, cultural and social. The first is related to social action; the second corresponds to the explanation of the genesis of the rationalization process; the third concerns the socio-institutional materialization of this process in different spheres (economy, art, politics, among others). The fact that the understanding of efficiency as a calculation prevails in administration leads to the materialization of the rationalization process at the socio-institutional level, in which the expansion of formal rationality is one of the main phenomena.

Formal rationality is a concept developed by Weber as an ideal type, characterized by regularities of action in which the relationship between means and ends is established in reference to norms, laws and regulations. This calculation takes place with no regard for people – the guidelines for the calculations are not their interests or needs. The autonomization of the rules is central at this point, because the law, rule/regulation, concerns people, but is not subordinated to them. Individuals do not need to make the utilitarian calculation of consequences, as the relationship between means and ends is placed in the rules<sup>15,16</sup>.

With limited contours after the Industrial Revolution, formal rationality is related to the development of modern capitalism. Calculations are carried out with reference to market laws and can materialize in organizations in the form of norms and regulations. The formally rational character of economic management, according to Weber<sup>16</sup>, is related

to calculations and numbers guided by rules. Kalberg<sup>15</sup> shows that formal rationality increases the more these calculations are guided by market laws. Efficiency can be understood as a ‘rule’ of calculation that mediates between means and ends, aiming at optimizing the former in relation to the latter.

Within companies, the rationalization process was consolidated as a rational organization of work, which was guided by the criterion of efficiency. It is worth remembering that this is a criterion for increasing the efficiency of machines that was transposed to the organization of work, in a process in which those machines served as a model for this one. Morgan<sup>17</sup> describes the first management theories through a metaphor of the organization as a machine, within which workers were seen as parts. Companies and workers were conceived as an abstract idea, which required workers, upon entering the company gate, to disengage from their past experiences and focus only on the predetermined tasks assigned to them<sup>18</sup>. Thus, the search for increasing efficiency occurred “by reducing the worker’s freedom of action”<sup>17(38)</sup>. The rational organization of work culminated in the formalization of tasks to be performed and an improbable perfect adjustment of workers<sup>18</sup>.

Within this perspective, workers are represented by the notion of *homo economicus* – a theoretical construction that postulates the calculated self-interest as the main human motivation. Thus, the worker is seen as a calculating and rational agent based on postulates such as individualism, optimizing behavior, absolute rationality and the universality of this conception. In the notion of *homo economicus*, the human being is conceived as atomized and self-interested, which means that concern for the well-being of the other occurs to the extent that one’s own well-being is affected. In this way, even altruistic action would occur due to an individualistic motivation and any moral consideration would be subordinated to the maximization of individual utility. This perspective disregards that the human mind is

conditioned by emotions, knowledge, cultural aspects and lived experiences<sup>19</sup>.

The rational organization of work aligned with a view of the worker as *homo economicus* produced around the concept of efficiency an ideal of absolutely balanced use of available resources and results obtained. This concept comes from the exact sciences to the social sciences – economics and administration – and incorporates assumptions of absolute efficiency. Efficiency is absolute, in engineering, when the amount produced is identical to the amount used, that is, there is no waste of energy. However, in the social sciences, it is rarely possible to measure the product and factors employed in production in comparable units<sup>10</sup>.

Thus, being efficient in industry necessarily implies a mechanical search for cost reduction. This objective, however, proves to be extremely more complex when trying to adapt it to governments and public health systems.

## Efficiency in public administration: the debate around the scarcity of resources

In public administration, efficiency already appears in Woodrow Wilson’s<sup>20</sup> seminal essay, published in 1887 and considered a historic milestone in the formation of public administration as an area of study. The maintenance of a democratic government was defended as dependent on the efficient use of public resources<sup>21</sup>. Here, the idea was present that science should be used to solve governmental problems and guide decisions and actions in this sphere.

Concepts such as efficiency, economy and science began to permeate the public scene, in defense of a professional orientation for government action. The role of the administration would be to execute, in the most efficient way, the purposes defined in the political scope.



There were the beginnings of what would later become the separation between politics and administration<sup>20</sup>. However, the meaning of efficiency, for the public sphere, was not homogeneous and became the object of dispute. The issues in vogue concerned the reduction of public spending and the improvement of services provided. Thus, it goes through the discussions whether efficiency could be treated in a normative way, as a public value, or if it would be an objective and scientific criterion<sup>21</sup>.

This process of increasing efficiency to parameterize public administration led several agents to indicate what they meant or understood when they used the term as a criterion for government action. Some emphasized that efficiency did not necessarily indicate reduced government spending, others that the term indicated disease-free population and good schools. The focus, they reinforced, was on fighting the waste of resources so that they could be well used in other areas<sup>9,22</sup>.

As a way of confronting this current, authors began to talk about social economy and social efficiency. The criticism was based on the idea that the terms efficiency and economy represented a simplistic approach that referred to administrative and not governmental or social issues; and this would result in the achievement of immediate results at the expense of fundamental or social values<sup>9</sup>. Gulick<sup>23</sup> highlighted that efficiency could be raised as a value for public administration, as long as it is submitted to values of politics and social order. Waldo, on the other hand, denies the possibility of efficiency being conceived as a value, since, for the author, something is not efficient or inefficient in itself. He asks: “Effective for what? Is efficiency for efficiency’s sake meaningless? Is efficiency not necessarily measured in terms of other values?”<sup>9(202)</sup>.

Waldo<sup>9</sup> also fought the idea of efficiency as an objective, neutral and scientific criterion, moving away from those who, at the beginning of the 20th century, defended a public administration that was based on scientific

knowledge to replace morals. He emphasizes his opposition to this view by justifying that, by appearing impartial or scientific, it would serve certain purposes. For Waldo<sup>9</sup>, efficiency depends on the purposes, both the effects and the objectives are a normative conception. Judgment, for him, is in the mind of each one and not outside of it<sup>9</sup>.

Although in the subsequent period there was a decline in the idea of efficiency and economy as central to public administration, it returned after the 1940s, mainly with the studies of Simon and of logical positivism. From this, economy and efficiency are reaffirmed as principles to guide public administration, as well as the separation between administration and politics<sup>21</sup>. Logical positivism provides for the separation of facts and values. Values would be within the scope of duty, ethics, morals and, therefore, politics; the facts would be subject to scientific analysis<sup>11</sup>. While Simon<sup>11</sup> defended the separation between facts and values, Waldo<sup>21</sup> questioned the usefulness of logical positivism as an analytical perspective. According to this author, logical positivism makes a distinction in logic and uses it as a distinction in life, when in fact “there is no domain of factual decisions from which values are excluded”<sup>21(97)</sup>.

There was, in the mid-19th century, the development of a bureaucratic apparatus that was based on knowledge and science to produce efficient actions in the governmental sphere. Although there were disputes about what an efficient government meant, there was an idea of regulation by the state as a solution to market failures. During this period, the so-called Social Welfare States were developed, through the expansion of a bureaucratic administrative apparatus aimed at social protection and the provision of services directly by the State, in areas such as health and education, for example<sup>24</sup>.

Despite these discussions in the academic field, developed by classic authors regarding the debate on efficiency in public administration, in the mid-1970s and 1980s, a movement

emerged that demanded that elected leaders reduce taxes, deregulate markets, reduce the bureaucracy apparatus and eliminate inefficiencies. The defense was that with the application of techniques from the private sector and with government agencies acting as companies, the problems of the public sphere could be solved<sup>24</sup>. Efficiency is again mobilized along with neoliberal ideas, a set of ideas and policies that are beginning to gain public attention and the governmental arena in different countries.

Although the term efficiency has been present since the formation of public administration as an area of scientific knowledge, it gains a prominent role in the face of the crisis of the Social Welfare States and the advance of neoliberal ideas. However, the central element is in the defense that the private sector is more efficient in the production of goods and services. This argument is mobilized as a justification for reducing the administrative machinery of the State and applying techniques from private companies as a solution for public organizations, accused of inefficiency<sup>2,24</sup>. In this regard Santos<sup>25(23)</sup> points out that

the proposition of withdrawing the role of the State in the administration and provision of social security and on the best behavior of the markets, was based on one of the axes of the neoliberal paradigm, which is the belief that production is carried out more efficiently in the private than in the public sector.

For Santos<sup>25</sup>, neoclassical economics rescued the Pareto Equilibrium to argue in defense of the superiority of market efficiency. However, this is a theory developed based on the idea of a perfect market, which does not apply to the health area. The idea of perfect competition, still in the Pareto sense, cannot be directly transposed to the health area, as it is an imperfect market or quasi-market, in which market laws do not apply and, therefore, are not desirable for its regulation<sup>25</sup>.

Preker and Harding<sup>26</sup> point out that, for neoclassical economics, there is a clear division between private goods and public goods, which must be produced and supplied respectively by competitive markets and public sector monopolies. Within this perspective, private goods will be allocated more efficiently through competitive forces in a perfect market. However, most health products and services cannot be classified as perfect public or private goods.

Conceptually,

an allocation of resources would be Pareto-efficient if it were not possible to increase one person's well-being without decreasing the well-being of another, given existing resource and technology constraints<sup>27(2409)</sup>.

Because, at this point, the Pareto optimum is found. The concept of efficiency in Pareto is about the optimization of available resources according to the calculation of utility, within which the conception of the individual fits within the *homo economicus*, highlighted in the previous section. From the 1970s onwards, in a context of crisis, the values surrounding the concept of optimality in Pareto seem to be more present in the economic scenario and in society, that is, the idea of reducing the costs of individual goods<sup>28</sup>.

Sen<sup>29</sup> discusses the limitations of the concept of utility used in Pareto's theory to judge well-being. Furthermore, the author also questions the ethical dimension of the Pareto optimum, within which some people in extreme poverty and others in absolute wealth can coexist; situation in which the former cannot improve their condition without diminishing the well-being of the latter. Brousselle, Lachaine and Contandriopoulos<sup>30(184)</sup> corroborate the criticism of Pareto's theory by stating that "this norm has nothing to do with the criteria of equity and justice".

Oliveira and Paula<sup>31</sup>, when addressing the principle of efficiency as part of the recommendations for implementing a managerial

public administration, question whether efficiency in public administration should be parameterized by the same criteria as business management. The authors argue that, in neoliberal ideas, the search for efficiency is presented as a factual dimension, from which the evaluative dimension must be removed.

However, the scope of values is closely related to the historical context and the neoliberal ideology is strongly anchored in individual values, which presupposes thinking about society and the solutions to crises from a private logic. As highlighted above, the first neoliberal policies presented and implemented were of a managerial nature, with the introduction of market management mechanisms in public organizations. However, from the 2008 crisis onwards, fiscal austerity appears as one of the main solutions for confronting it and the notion of efficiency is treated as a fiscal issue<sup>32</sup>.

One of the consequences of austerity policies in Brazil is the implementation of Constitutional Amendment No. 95, in 2016, which established the constitutional limit on expenditures and represents a reduction in the State's participation in the provision of public services. Faced with the limitation of financial, human and physical resources, the efficiency of health systems has increasingly occupied a prominent space. However, this space is mainly characterized as a mechanical reduction in costs with a view to fiscal austerity. The next section presents an approach to this broader debate, in the area of health, aiming at describing how the concept of efficiency is used in health management.

## Efficiency and public health

The health area is impacted by debates that take place in the broader scope of public administration. Among these, fiscal austerity has exerted a strong influence on health systems in recent years. Given this context, efficiency has been considered an important criterion in

times of financial crisis; however, there is a question about the evaluations and concepts used in the health area. According to Marinho and Ocké-Reis<sup>33(10)</sup>, “efficiency must be compared with the efficacy and effectiveness of clinical and epidemiological actions, ensuring the well-being of society”. In this way, it is necessary to clarify some conceptual differences, considering that the terms efficiency, efficacy and effectiveness are often confused.

In the health area, the concept of efficacy can be considered underlying that of effectiveness, applied mainly in controlled or experimental conditions. Effectiveness concerns the achievement of desired goals (in an ideal situation), that is, it refers to the notion that processes should contribute to generating these intended results. Effectiveness, on the other hand, comprises the effects of a given intervention on individuals in a population, therefore, it is directly related to the implementation of health actions. In both concepts, unlike efficiency, the contexts are not considered<sup>33-35</sup>.

According to Viacava<sup>36</sup>, the concept of efficiency varies according to existing values, principles and conceptions of what it means to be efficient; the author also warns that these different perspectives have implications for the health area, since research on the subject influences the production of health policies. Below are the concepts of efficiency present in the health area; however, it is important to point out that there is divergence between the authors regarding the definitions and forms of evaluation. Marinho and Ocké-Reis<sup>33</sup> highlight three different definitions of efficiency: technical efficiency; allocative or distributive efficiency; and scale efficiency.

Technical efficiency is defined as a quantitative relationship between the inputs used and the inputs needed for a given level of production. Or even, a quantitative relation between inputs and production level. For Marinho and Ocké-Reis<sup>33</sup>, production is defined both as health products (outputs) and as health results (outcomes). The former can be measured, for example, taking into account the number of



patients treated and the number of medical consultations, while the latter, based on the increase in quality and life expectancy. For Hurst and Jee-Hughes<sup>37</sup>, health outcomes are closer to the concept of effectiveness than health products are.

The concept of allocative efficiency comprises a relationship between the observed cost and the minimum cost. Therefore, it is the “least costly combination of inputs that can generate a certain level of production”<sup>33(40)</sup>. Mendes<sup>28</sup>, in turn, focuses this definition on the well-being of collectivities, in this sense, the increase in allocative efficiency is represented by the maximization of social well-being from different combinations and applications of resources. Funding for health regions can seek to increase efficiency in the distribution of resources, which can be re-allocated from overfunded to underfunded regions, taking into account the achievement of health goals.

Scale efficiency is defined as the optimal size divided by the observed size<sup>33</sup>. This concept was used by the World Bank (BM) in 2017 in a report that analyzed the efficiency of public spending in Brazil. The proposal presented guides a reduction in the number of small hospitals, due to a difficulty in gaining scale by these organizations, that is, an inefficiency of scale. Thus, the analysis points to the difficulty of gaining scale as one of the sources of inefficiency in the Brazilian health system and, in this sense, highlights:

Most of the inefficiency is driven by the large number of small hospitals and the small size of municipalities (which are too small to provide health services on an efficient scale)<sup>38(115)</sup>.

International organizations have guided the main debates around the efficiency of health systems. The World Bank, for example, for at least 15 years, has been launching proposals of reforms to reduce expenditures in the health sector. It is perceived, on its part, the presence of a definition that associates efficiency with

cost reduction without considering efficacy (objectives/intended results) and effectiveness (meeting the health needs of the population). According to Marinho and Ocké-Reis<sup>33</sup>, this definition is part of an economist managerialism that serves mainly commercial interests.

Marinho and Ocké-Reis<sup>33(24)</sup> point out that

At first sight, this rhetoric is persuasive insofar as it conveys that its critics are against, for example, the introduction of a less expensive government program or hospital service.

However, an important question concerns the concept and assessment of efficiency employed in this analysis: a direct and simple identification with cost control detached from efficacy and effectiveness. Efficiency, more than a response to the collective needs of society, has come to mean revenues greater than expenditures, thus an economic rationale imposed on public policies<sup>28</sup>.

With regard to the analysis of health efficiency, this is often inserted as part of the economic evaluation; for this reason, it concerns the relationship between the costs (means) and the consequences of interventions (ends). Thus, this broader conception of efficiency unfolds into more specific analyses, such as cost-benefit, cost-effectiveness and cost-utility. The difference between them lies in the way in which the consequences of interventions are considered, that is, the ends. The implemented means are expressed in monetary terms, in the form of costs<sup>30</sup>.

In cost-benefit analysis, the ends (direct and indirect benefits) as well as the means (costs) are expressed in monetary terms. It is an evaluation used to analyze the efficiency in the allocation of financial resources, which seeks to determine which among the alternatives is the most profitable<sup>30</sup>. The direct benefits relate to savings with treatment of avoided diseases; the indirect, on the other hand, to changes in society's productive capacity due to the decrease in morbidity and mortality. According to Ugá<sup>39</sup>, this analysis is

based on the theory of human capital, which allows the measurement of human life according to remuneration in the labor market. However, the author emphasizes the damage to social rights as a condition of citizenship, since lower income social groups would bring less benefits; while retired and unemployed would represent zero benefit.

In the cost-utility analysis, the consequences of the intervention are measured in terms of QALY: Quality-Adjusted Life Years, a calculation that considers the years of life gained according to the value of these years of life. In the cost-effectiveness analysis, in turn, the ends are measured in units of real value, such as years of life saved and preventable diseases<sup>30</sup>. For Ugá<sup>39</sup>, the cost-effectiveness analysis first implies the establishment of a goal, so that, then, it is possible to confront the different ways of achieving it.

The work of Avedis Donabedian, a classic author in studies on evaluation and quality in health, represents an important contribution regarding efficiency in health management. The definition presented by the author – “ability to reduce health care costs without reducing the improvements achieved”<sup>40(9)</sup> – is complemented by the idea that the exclusive reduction of costs does not represent efficiency in health management. Here, a perspective stands out that opposes economicist managerialism, in which efficiency is limited to a reduction in costs. Donabedian<sup>40</sup> presents three ways to improve efficiency in the context of health, they are: clinical efficiency, managerial efficiency and distributive efficiency.

Clinical efficiency depends on the judgment, skill and clinical knowledge of health professionals, so that they do not adopt unnecessary or less effective practices and procedures. It is noteworthy that Donabedian<sup>40</sup> introduced the concept of clinical efficiency in health management, putting the performance of health professionals in perspective. Managerial efficiency, on the other hand, concerns the production of services with optimization of the installed capacity in organizations, such

as equipment and beds, and the reduction of errors in the work process, which increases costs. This definition is related to scale efficiency, a concept mentioned above, adapted from economics for the management of health services<sup>40</sup>.

Distributive efficiency, in turn, corresponds to the allocation of resources (concept of allocative efficiency mentioned above). The distribution of resources in the area of health takes into account the improvement in the health conditions of the population, allocating resources to subgroups with greater health needs. Thus, Donabedian<sup>40</sup> points out that, from this point of view, the quality of health services at the level of society is observed, expanding the perspective focused on individual care. In this regard, an understanding of efficiency linked to effectiveness in health is perceived, according to the author<sup>40(116)</sup>,

Allocative efficiency has to do with achieving the greatest improvement in human well-being using limited resources according to a system of priorities based on the relationship between cost and effectiveness.

## Final considerations

This work aimed to describe the trajectory of development of the concept of efficiency in public administration, bringing this debate to public health. This is an area where the search for efficiency has been increasingly placed at the center of management, especially after the rise of new public managerialism perspectives in neoliberal contexts. The focus of the work was to develop a theoretical-analytical argument that would allow the advancement of empirical research towards a deepening of what efficiency in health management means beyond a fiscal issue.

The first point to be highlighted as a conclusion for this article concerns the confluence between engineering and administration.

Industrial development, throughout the 19th century, placed the question of efficiency as a foundation of modern societies. The key to efficiency in engineering concerns maximizing the relationship between energy and productivity. In the formation of administration, this conception is brought to the way of organizing companies, especially from the influence of engineers like Frederick Taylor, Henri Fayol and others. The next outcome was its connection with the perspectives of *homo economicus* arising from neoclassical economics, resulting from the rationalization process of the modern West. The concept of efficiency, therefore, starts to be understood from a perspective of the human being as a calculating agent in a mechanistic perspective.

Efficiency in public administration, throughout the 20th century, is marked by a series of observations that will deepen in the analysis of the meanings of the concept of efficiency. Classic authors in the area, such as Dwight Waldo, Herbert Simon, among others, will question models based on neoclassical economics, especially with regard to the distinction between public and private goods. The discussion around the efficiency of the private sector applied to public management will become more intense from studies on neoliberal ideas and business perspectives as paradigms of good governance practices.

In the specific case of public health, the perspective of efficiency as developed over the analyzed period will have a great impact. The concept of efficiency as an exclusive relationship between input and output – as developed in engineering – mixed with the perspective of neoclassical economics, founded on *homo economicus* and its vision of society as a market, will bring to the health area a financialized conception of the health Service. In this conception, ‘efficiency’, more than a response to

society’s collective demands, means mainly revenues greater than expenses. This perspective will justify resource cut programs, push for privatization and other measures guided by business and market logic.

However, in the area of public health there has been a growing effort to overcome a reductionist view of the concept of efficiency. In this sense, efficiency is not taken as a sufficient condition for health management. The concepts of efficacy and effectiveness must also be considered as fundamental principles in management. A wide range of studies and research in the area of health and public health have highlighted that efficiency cannot be linked solely to a financial dimension, but also articulated with considerations regarding the conditions and health needs of populations. And, in this sense, it is worth highlighting the background assumption from which market laws do not apply to the public health area.

This review revealed the existence of two major and main conceptions of efficiency: the first linked to the process of financialization of public health and the second connected to collective health, efficacy and effectiveness in health. It is suggested, for future research, an empirical bias that reveals how efficiency has been conceived, in terms of definitions, symbols, images and ideas around the concept, by managers in the health area. In addition, there is a lack of empirical research on the assessment of efficiency that is carried out by government agents.

## Collaborators

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