

A NEW MODEL FOR A DISTRICT HEALTH SYSTEM SUPPLY CHAIN: PROPOSITION AND APPLICATION FROM CLASSIC TO CORONAVIRUS CARE

UM NOVO MODELO PARA UMA CADEIA DE SUPRIMENTOS DO SISTEMA DE SAÚDE DISTRITAL: PROPOSIÇÃO E APLICAÇÃO DO ATENDIMENTO CLÁSSICO AO CORONAVIRUS

UN NUEVO MODELO PARA UNA CADENA DE SUMINISTRO DEL SISTEMA DE SALUD DISTRITAL: PROPOSICIÓN Y APLICACIÓN DE LA ATENCIÓN CLÁSICA AL CORONAVIRUS

José Edson Lara

Centro Universitário Unihorizontes e Fundação Pedro Leopoldo
jedson.lara@hotmail.com

Bruno Pelizzaro Afonso

Instituto Federal de Minas Gerais
bruno.afonso@ifmg.edu.br

Paulo Emílio

Instituto de Educação Tecnológica
diretor.educacao@ietec.com.br

Tarcísio Afonso

Fundação Pedro Leopoldo
professortarcisioafonso@gmail.com



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ABSTRACT

Rationale: The theme of health today has been the most worrying in the world and in Brazil. Its context and management have generated academic, political and administrative discussions around the world. The main problem about health services offered in small towns is related to a deficient view and poor management conditions of public administrators about the agents that could contribute to community health care. **Objective:** This study was aimed at contributing to analyze the deficiencies and propose solutions for health services in the municipality, applying the theoretical model of the Supply Chain. **Method:** In this study, a new model for supply chain management was developed and proposed, based on contributions from the literature, seeking to offer improvements for the management of the municipality's health system. **Result:** This health supply chain model is much more complex, involves many community organizations, but is also better able to provide effective health services at low cost. **Contributions:** presentation of a new model capable of generating insights for new research and for executive applications.

Key-words: Public Health System; Health Administration; Supply Chain.

RESUMO

Fundamentação: O tema da saúde hoje tem sido o mais preocupante no mundo e no Brasil. Seu contexto e gestão têm gerado discussões acadêmicas, políticas e administrativas em todo o mundo. O principal problema sobre os serviços de saúde oferecidos nas pequenas cidades está relacionado a uma visão deficiente e escassas condições de gestão dos administradores públicos sobre os agentes que poderiam contribuir com a assistência comunitária à saúde. **Objetivo:** Este estudo foi direcionado a contribuir para analisar as deficiências e propor soluções para os serviços de saúde do município, aplicando o modelo teórico da Cadeia de Suprimentos. **Método:** Neste estudo, foi desenvolvido e proposto um novo modelo para o gerenciamento da cadeia de suprimentos, com base nas contribuições da literatura, buscando oferecer melhorias para a gestão do sistema de saúde do município. **Resultado:** Esse modelo de cadeia de suprimentos de saúde é muito mais complexo, envolve muitas organizações comunitárias, mas também é mais capaz de fornecer serviços de saúde eficazes a baixo custo. **Contribuições:** apresentação de um novo modelo capaz de gerar insights para novas pesquisas e para aplicações executivas.

Palavras-chave: Sistema de Saúde Pública; Administração da Saúde; Cadeia de Suprimentos.

RESUMEN

Fundamentación: El tema de la salud hoy ha sido el más preocupante en el mundo y en Brasil. Su contexto y gestión han generado debates académicos, políticos y administrativos en todo el mundo. El principal problema sobre los servicios de salud ofrecidos en los pueblos pequeños está relacionado con una visión deficiente y condiciones de gestión deficientes de los administradores públicos sobre los agentes que podrían contribuir a la atención de salud comunitaria. **Objetivo:** Este estudio tuvo como objetivo contribuir a analizar las deficiencias y proponer soluciones para los servicios de salud en el municipio, aplicando el modelo teórico de la Cadena de Suministro. **Método:** En este estudio, se desarrolló y propuso un nuevo modelo para la gestión de la cadena de suministro, basado en las contribuciones de la literatura, que busca ofrecer mejoras para la gestión del sistema de salud del municipio. **Resultado:** este modelo de cadena de suministro de salud es mucho más complejo, involucra a muchas organizaciones comunitarias, pero también es más capaz de proporcionar servicios de salud efectivos a bajo costo. **Contribuciones:** presentación de un nuevo modelo capaz de generar ideas para nuevas investigaciones y para aplicaciones ejecutivas.

Palabras clave: Sistema de salud pública; Administración de salud; Cadena de suministro.

INTRODUCTION

Public health in Brazil has been the target of constant criticism and dissatisfaction on the part of the population and these are easily identified as related to the difficulties of obtaining health services. In our days, for example, the coronavirus phenomenon has shown that, although there are much more advanced countries in the provision of health services, many problems appear to be common to this sector. Political authorities have been suffering severe social criticism, and as a consequence, they have been looking for ways to solve problems, some basic in terms of public health (WORLDMETER, 2020). As consequence, the World Health Organization (WHO) is gathering the latest international multilingual scientific findings and knowledge on COVID-19. The global literature cited in the WHO COVID-19 database has been updated daily from searches of bibliographic databases, hand searching, and the addition of other expert-referred scientific articles. All this database represents a intense multilingual source of current literature on the topic. While it may not be exhaustive, new research is added regularly (WHO, 2020).

According to Roland and Moleki (2016), the literature on the subject of health systems management converges towards the identification, understanding and management of the systems' administrative processes. It is natural that the nature of the systems, their purposes, processes and results, are permanently questioned, which leads to systematic redefinitions of the roles and actions of its stakeholders. In the considerations of Guo, Berkshire, Fulton and Hermanson (2017), the majority of the academic contributions converge to the decision making process in the system. In this sense, the relationships as a complex conception leads to the sophistication of the systems, as well as to improve the amplification of the intelligence necessary to understand the social relations to be served.

The World Economic Forum Global Future Council has been dedicating a special effort and competence to position the theme of health in the world as an analytical unit for studies and purposeful actions. In its program of studies, entitled "Future of Health and Healthcare", it establishes its commitment to develop and integrate experts, integrating stakeholders representing the public and private healthcare sectors (WEF, 2019). This important institution recognizes the intensity of the misalignment of relationships and, consequently, of management, which occur systematically among stakeholders in the health sector, generating performance far below what is expected and necessary. Furthermore, it warns of the chronic fact that in less developed countries and societies the problem is much more intense, more serious and more difficult to solve. This is due in large part to competitive objectives restricted to power asymmetries and cooperation failures, among other things. These are intense challenges that are difficult to overcome and must be dealt with collectively. It is in this context that health-related problems have effectively become one of the most important for the social development of peoples around the world.

According to Cassettari, Patrone and Saccaro (2020), "the Fourth Industrial Revolution, is having a strong impact in all industrial sector but, although less evident, it is also bringing important results in other fields such as Healthcare Systems". Lee, Kim, Quan, Kim, Kim, Yoon, and Choi (2018) propose a conceptual illustration of communications between organizations in Industry 4.0, including the health care services. They establish the importance of the relationships between complex systems and estimate how the convergences to the cyber physical system take place.

The public health problem has been showing a world in strong turbulence, which has generated strong forecasts of intense impacts on development around the world. The long waiting lines service, even in simple and common cases, and the lack of medical drugs are some of the most common complaints whenever the population is asked to talk about health services. Besides, these same arguments are pointed out by the media continuously.

In health management, logistics is considered an essential function in administration. It transcends from the idea of a structural resource to a strategic role in the administrative complex. It covers all strategic areas of a healthcare organization, notably hospitals. It impacts all the functions and actions of corporate stakeholders. It contributes strongly to the concept of effectiveness, as well as to the standards of excellence required in efficiency parameters. Critical sectors, such as emergency care, achieve nothing in terms of efficiency without logistical excellence. Determining elements of excellence in health services

include functions and activities such as acting in general planning, forecasting and estimating, purchasing, receiving, storage, checking product validity, monitoring the storage of critical perishables, supplier relations, budgeting, people management, analysis and market, relationship with vendors and many others commonly found in healthcare organizations (JAWAB; FRICHI; BOUTAHARI, 2018).

The literature in the area of management provides several different definitions for hospital logistics, as well as their functions and activities. However, these definitions and taxonomies do not appear to diverge substantially among academic researchers. Probably, since these are themes oriented to more concrete elements of health services, abstractions are not very prevalent in the reflections and actions of executives in the area. It is obvious that abstract attributes of logistic functions are avoided. However, they are clearly more amenable to concrete implementation. Thus, the constructs and variables of study become more easily understood in the studies of the models, as well as in the management of daily life according to Aptel, Pomberg, and Pourjalali, (2009) and Granlund and Wiktorsson (2013).

In Brazil almost all municipalities are suffering with precarious conditions in their health systems, thus making it necessary for the population to look for medical assistance away from their homes, in other counties.

As a reference, the Bom Despacho municipality stands out, which consists of the analytical unit of this study. Therefore, despite the ever-increasing investments made in health care in this municipality, the municipal government still continues to find out that the services rendered to the community are very poor.

Bom Despacho is a small city in the state of Minas Gerais - Brazil, with all the characteristics of a small and poor city. It is located in the Center-Western region of the state and has a population of 50.605 inhabitants (IBGE). Although its efforts towards social and economic development are intense, it suffers the same problems and the same intensities as many other municipalities. Therefore, it is a typical and interesting municipality as an analytical unit of this study. The Gross Domestic Product is around R\$ 1,211 bilhão and its GDP is 24.209,87 per capita ((IBGE, 2017). The city is located 141 km (89 miles) away from Belo Horizonte, the State Capital. Its economically active population is divided mainly between the cattle raising and the industrial sectors. The city has schools and hospitals that are considered good in the region.

Considering this scenario, the key question is: "What are the deficiencies and the opportunities for improvement that exist in the value chain supplying health services in the municipality of Bom Despacho, Minas Gerais?" The objective of this study was established as the analysis of the supply chain in the health services in Bom Despacho, to identify the deficiencies and possibilities for improvement. More specifically this paper proposes to:

1. Identify the health supply chain in Bom Despacho;
2. Analyze the processes that compose the value chain;
3. Verify the deficiencies and possibilities for improvement in the units that compose the value chain;
4. Analyze the deficiencies and possibilities for improvement in the links or interfaces of the value chain; and,
5. Analyze the integrated and collaborative actions, which are able to bring meaningful gains to the health services in Bom Despacho.

Despite the strategic importance of the role and activities in logistics management in health systems, academic approaches are not as generous as other areas. Usually, studies in this area are very diversified by other areas and organizations, and the models are very often adaptations from other organizations, possibly quite different in the area of health management. Thus, studies in this area prove to be pertinent, important, timely and contemporary.

CONTRIBUTIONS OF LITERATURE - ABOUT HEALTH, CORONAVIRUS AND LOGISTICS

The role of logistics and of management of the supply chain in the health system can be considered in the new frontier in business competitiveness, especially in the context of the Fourth Industrial Revolution (WEF, 2017). After all, the health industry is positioned as one of the strategic sectors as determinants of the quality of life of a people. Therefore, it is at the center of all academic and executive analyzes, whether in the scientific, technological or managerial context. Governments, in all their dimensions, universities, research centers, the media and all other social forces are discussing health as never before. The coronavirus phenomenon prompted all these entities to discuss the topic in depth, in all its nuances. The coronavirus phenomenon exposed a fragility to the world that the world itself was unaware of. Although it is a passing phenomenon, it will leave intense consequences in the most diverse societies (EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL – ECDC, 2020). The coronavirus will probably change the way the world thinks about priorities, care and the worldview itself (ROSENBAUM, 2020).

At this time, essential unknown resources, such as antivirals capable of inoculating the virus, as possible vaccines that effectively prevent contamination and even strengthen human immune systems have become essential (MUNSTER; KOOPMANS; DOREMALEN; RIEL; WIT, 2020). At the same time, such simple protection features, such as a small fabric mask, have been essential for people leaving their home environments.

In the same sense, urban logistics have completely changed, with intense restrictions on public mobilization in urban areas (RODRIGUES-MORALES; MACGREGOR; KANAGARAJAH; PATEL; SCHLAGENHAUF, 2020). Domestic logistics have changed, with people having to work in their own homes, creating home offices. The routines of almost all companies have changed, with workers exercising their functions without having to be present at organizational headquarters. The configurations of costs and use of operational resources in organizations have changed. Ways of communicating between managers and employees have changed. Ways of presenting work results and operational reports have been changed.

Finally, domestic life and corporate life have been intensely changed. For how long? Only the time will reveal !!!

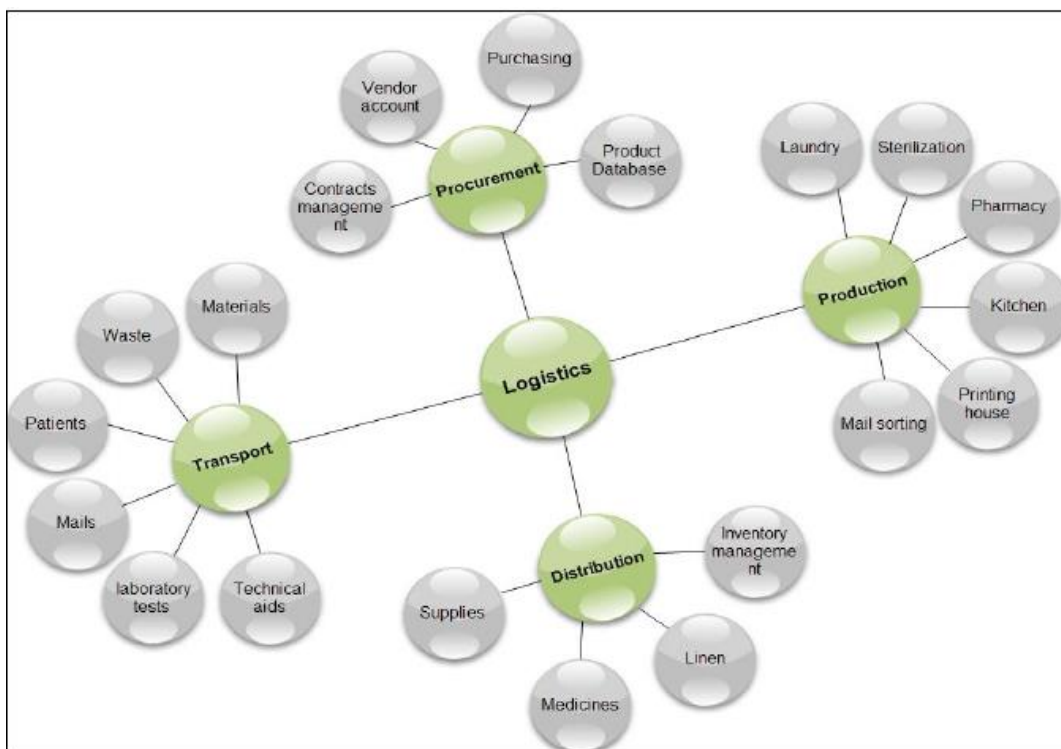
Beaulieu, Roy, Landry, Michaud, and Roy (2014) among other authors, describe how logistics contributes to business competitiveness. However, Supply chain logistics and management also have an important role in the solution of problems in the public sector.

Somon, Serio, Pires and Martins (2014) support the concepts of supply chain management, in accordance with classical literature, in the sense that:

- The supply chain must be seen as a whole;
- Deriving from the first, it requires strategic decision making, the supply is shared by practically all the chain functions, with a direct impact on the costs and market share;
- Stocks are used as balance mechanisms, as a last resource; and
- The change of the interface for integration.

Logistic management also has as its responsibilities stock controls of raw materials and finished products, distribution, and sales places, in the global view, since internal integration alone is not enough. For the health sector, the management of the supply chain can contribute for cost reduction and the improvement of the quality of the services offered, because there is an enormous gap in this area, as shown in figure I. According to several authors such as Jawab, Frichi and Boutahari (2018), the most common and strategically most important logistics services are: purchasing/buying, procurement, stock management, distribution, receiving, replenishment, information system management, transport, pharmacy, patients flow, food service/catering, laundry, cleaning / hygiene, sterilization, printing, telecommunication / telemedecine, mail service, planification/scheduling, design, forecasting, reception service, waste management, home care logistics, maintenance, safety and security, construction, upkeep of green spaces.

Figure I: Hospital logistics dimensions



Source: Beaulieu et al. (2014).

As stated by Ducasse (1995), the logistics concerning hospitals reach at least three frontiers of meanings, each one very well defined, but interacting with the others.

- “The traditional activities in hospitals that aim to the management (purchasing, production, procurement, storage, distribution, etc.) of the material flows necessary for the production of care (medicines, medical and hotel supplies, meals, linen, waste, etc.)
- An engineering that aims to the use of flow modeling techniques to spotlight the hospital organizational choices or to implement physical distribution technologies in the hospital context.
- A managerial approach aiming, from the processes and flows (patient flow, physical flows, information flows), to redesign the medical products and the hospital organization, taking into account the expectations of the environment.”

The majority of the population knows that the health of a large part of the Brazilian people is not faring well. They also know that when health services are needed, they do not work properly and do not solve adequately the problems of ailments. The reason for this is that in reality these problems are deeper than one thinks. No one can enjoy good health before each and every one has a good standard of living in terms of food, housing, water, sewer, transportation, education and leisure.

This fact makes clear the main factor that brings inequalities: our capitalist society is divided into different classes, but few have a lot of money, while many have too little, and wealth is part of the life of a minority, and poverty is the reality of the majority of the population. The truth is that those who have some resources pay for a private medical plan, while the poor are left aside, with no other option besides that offered by the public health system, called SUS (Sistema Único de Saúde).

In this scenario, reality unveils in Brazil an almost complete absence of the role of the state as planner, an embryonic regulation, and marked unbalance between demand and supply of services, inadequate management methods, archaic structures and an excess of bureaucracy, according to Souza, Malta, França and Barreto (2018), and other authors, who also point out the need for health to be an essential part of building a national development Project. These facts end up by aggravating the situation

described in the health system, because as one tries to improve the efficiency of a service of legal precepts – essential to guarantee the principle of equality – the roadblocks of inequalities increase, thus decreasing the offer of services to the needy.

Besides, the official proposals for changing the management tools – social organizations, management contracts, executive agencies, support foundations – do not manage to conceal the intentions of the government, that is, to get rid of its responsibilities related to the health services, especially the problems related to gratuity and its complexity.

All this means that the achievements desired in terms of public health cannot be the responsibility of the health sector alone, but must be shared by the Government and the society, through economical and social policies. This calls for a sensitization of the government for the needs and aspirations of the majority of the population. Also, health must be considered an objective in the economical and social development process, and not only a means to other ends.

METHODOLOGY AND METHODOLOGICAL PROCEDURES

This study aimed to investigate the fundamentals related to the public health supply chain in Bom Despacho, Minas Gerais, observing the critical elements, in order to allow the proposition of a new model for the management of the health system.

The local government under study responds to several circumstances: there is a deficiency in the quality of medical services; several quality problems in these services; the government is determined to reach the level of excellence; besides, there is a strong determination by the local government to intensify efforts to take on the problems and, in working with partners, achieve results compatible with the demands of the population.

The definition of the new health system in the municipality of Bom Despacho with all the links that are part of the supply process in the health services was feasible with that contribution of the realization of this study. This, in itself, supports the assumption and justification of this study.

An exploratory empirical study was carried out with the objective of researching, from public health service providers, their observations and opinions on the status quo of the service, in terms of logistics, incorporating concepts and realities about the conditions, the strategies, structures and results of health logistics management. The observation unit of this study covered agents who participate directly or indirectly in the provision of services to the public health system in the municipality. The sources of evidence for this research were: a semi-structured interview with 16 questions, based on a basic curriculum, but open to listening to the interviewees' free opinion. The target audience comprised civil servants of the municipal government, in addition to all other agents of the health system.

The interview guide consisted of a briefing containing basic questions and allowing, based on their answers, to encourage the formulation of others, considered relevant to the composition of the proposed model, and in line with the information and opinions of the interviewees. Therefore, it is characterized as an in-depth interview.

Data collection was carried out in February 2020 at Bom Despacho City Hall, Minas Gerais. Initially, documentary information was considered relevant, as well as, through other information from employees in the sector, the interview guide was prepared. Subsequently, with the treatment of information, the current supply chain in the area of public health on the use of logistical management structures by the municipal administration was identified. The logistics management process and its results were also investigated, allowing the configuration of a proposed management model.

The survey results are based on the analysis of twenty-five unstructured interviews. From the answers, it was verified if there was, in fact, pertinence, consistency and robustness to be consolidated as valid for the description of the model. The sample was divided into professional occupations, with the aim of covering as much information as possible about the health service supply chain. The groups of nurses and health administrators represented the largest participation, with 28% of respondents. The

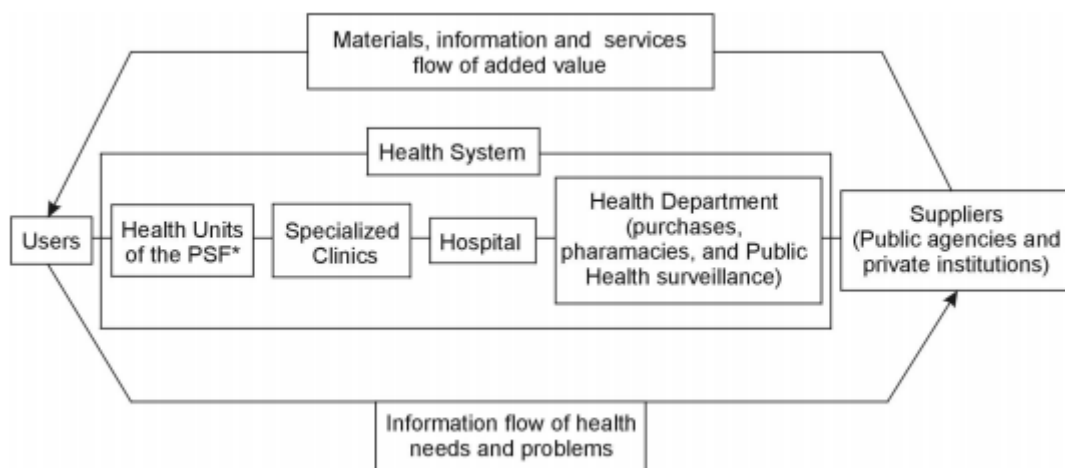
groups of health agents and coordinators represented 16% and the group of health entrepreneurs represented 8% of the total of people interviewed.

The processes through which the health system operates services, information and materials and provides value to its users were initially analyzed. For the evaluation of health system processes, we sought to identify the logistical flow of the supply chain of basic resources for users.

RESULTS

The organization's existing concept of supply chain flow in the health system presented, according to the interviewees' reports, serious flaws related to the extent to which agents who can contribute to improving the quality of health services. The narrow view about health service participants is illustrated in Figure 2.

Figure 2 – Original view of the health system logistic management process



Adapted from: Christopher, M. & Holweg, M. (2011). "Supply Chain 2.0: Managing Supply Chains in the Era of Turbulence." *International Journal of Physical Distribution and Logistics Management* 41 (1): 63–82

* PSF – Family Health Program – a government-run program in which a physician, hired by the municipality, visits and cares for the health of several families.

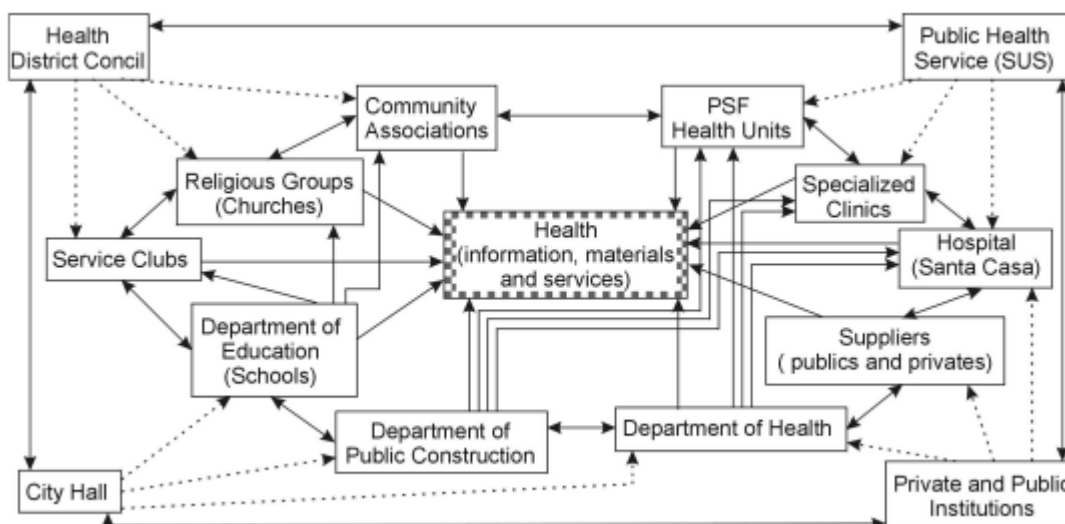
This view of the system as a production line in which the links are not sufficiently strong to sustain the chain allows for the rupture of the process in some of its links and hinders the balance of actions throughout the supply chain causing the need of bottleneck management all the time.

The research indicated that in order to improve the health system in the city of Bom Despacho it is crucial to adopt a new and broader view of its supply chain. Besides the need to inform and sensitize the population, there is also need of practical actions to sanitize and effectively fight diseases and their causes. This was identified through the possibility of cooperation especially with service clubs, and this can also be extended to other institutions or groups in the community. Such actions were well described by the president of one of the service clubs like Rotary and Lions in Bom Despacho: "Rotary Club did a good job, and it was even emulated by other clubs. It was a beautiful initiative performed in the hamlets and villages and was called rural journey. We gathered Rotarians, physicians and dentists, and we would go to the place and would try to bring them some health care. We performed examinations free of charge, gave them medicines, etc. Even agricultural technicians of Emater (a government agricultural agency) would come along. We would also hold instruction meetings that tried to cover 100% of the local population. In the end, we would have a celebration".

Examining all the interviews, we found a series of collaborative actions that may promote substantial gains to the public health in the municipality. The most important discovery however is the roll of institutions that may help the flow of information, services and materials in the supply chain.

It is therefore possible to propose a new model for the supply chain of the health system in Bom Despacho, based primarily upon the data collected in the interviews which give us a more detailed vision of the present health system, as we try to demonstrate through the Figure 3 below:

Figure 3 – Proposed model for the health system



Source: Contributions of authors

From the proposition of this model, it is possible to notice the greater need for integration among all the actions carried out by the health system, as well as the sight of the levels of influence in the supply chain structure. This model also gives the leadership a more clear view of the system's complexity and of the greater difficulties that exist in the planning and control processes, thus making these administrators look for the synchronization and coordination of decisions through the supply chain. This model, designed to be comprehensive and engaging among players, or stakeholders, defining the roles of each, is close to the Quintuple Helix Model, as presented by Carayannis, Barth, and Campbell, (2012). In this model, the authors establish a visualization that contemplates a robust, intense and result-oriented collective interaction for all social agents of innovations. Thus, they propose the exchange of knowledge in a state (nation-state) through the five subsystems: educational system, economic system, natural environment, public based on the media and culture, including also civil society and the political system. The competitiveness of a country or region is achieved through the performance of these systems. Regarding the hospital system, the idea, in summary, is very approximate. The players are basically the same, the objectives are the same as the conditions, the strategies, the structures and the desired results are close.

This process is called Supply Chain Management For Health System and it is understood as a basic tool for strategic relationships, while extremely necessary to the generation of value for all participants, not only users, since we are dealing with public institutions that have social welfare as their basic mission.

The so-called municipalization process of health has demanded more than ever a greater participation of the local power, thus placing in the hands of the municipalities the planning, management, and integration of health services. And such demands are the consequences of difficulties that very often cannot be solved through isolated actions on the part of the municipal government. SUS (the governmental health system), created in 1988, has promoted from its beginning the autonomous management of health by municipalities. Since there are fixed budgetary provisions for this system, the liberation of quotas ends up by depending on the Ministry of Health, a reality that makes it difficult to plan actions in the municipality due to the lack of resources. Thus, the municipal governments depend on management processes that aim at the integration of actions in the health system so that the resources,

up to that moment kept to a minimum, may be increased to the level of the value supplied to its users. This is proposed through the approach of the supply chain logistic and management concepts.

In the context of the coronavirus phenomenon in which emergencies occur that impact the special demands and, consequently, the need for high quality care in terms of urgency of care, potential for contamination of the environment and the attendants, availability of beds and other critical resources, availability from medical and paramedical professionals, supply chain management and all other conditions, become critical. All agents appointed in this model are impacted, each at their own time and in their special conditions, to contribute to the solution of this serious problem. Thus, the dynamics of this system, which in itself, would already be complex in situations of "normal" demands, is certainly much more dynamic and critical. Almost in all over the world, this problem exists. As a manifestation, there is an emergency construction of "hospitals" in schools, football fields and other spaces. In this whole process, it is important to highlight the main critical care factor: health professionals. Exactly they have been working intensely, almost always without the right conditions, and themselves being contaminated with the virus. This is certainly a new experience for the whole world. Even for the small town of Bom Despacho.

Therefore, this experience represents an excellent opportunity to rethink, redesign and reimplement policies and strategies that enable the dynamization of social and emergency services, through management models that are effectively comprehensive, intelligent, complex and deeply results-oriented. Above all, that meets social objectives and not obscure political or economic objectives, so common in Brazil.

CONCLUSIONS

Initially considering the literature that covers the supply chain and the logistics of the public health system, it is possible to present some conclusions about the analysis of the value chain in the health system of a municipality having its bearings on the case of the health system of Bom Despacho.

Among the conclusions drawn from the main objective of the study which was to analyze the supply chain in the health services in the municipality, identifying flaws and improvement prospects, it may be stated, based on the findings, that the main focus is to add value to the health supply chain, and, to do that, it is essential to integrate actions and converge them through the coordination of managers of the public health system. This is directed towards the correction of the main deficiency and to the opportunity of improvement in the services of the value chain in Bom Despacho.

In this line of thought, a change of the conceptual model becomes necessary. In the present model, the actions are linearly dispersed throughout the flow of the supply chain. The new model proposed allows the chain to be approached as a continuous service cycle in which it is not always possible to identify the beginning or the end of the actions in the supply chain.

The key question of the study, "What are the deficiencies and the opportunities for improvement that exist in the value chain supplying health services in the municipality of Bom Despacho, Minas Gerais?" originates from the idea of the enormous difficulties that municipal governments, such as this one, go through nowadays because of the deficiencies and possibilities for improvement in health promotion, and thus, as a follow-up of this presupposition, is verified through the analysis of all the objectives of the work.

As to the analysis of the first objective, "identify the health supply chain in Bom Despacho", it was concluded that the general concept of the supply chain (materials, information, and services) is fragmentary, and the value supplied to the user is compromised because of this dispersion in the actions of each unit. However, it must be pointed out that although some units are aware of the need of joint actions in the supply chain, the sequence of actions that follows a unilateral process of service rendering ends up by hindering a lot the application of the management process in the chain. The reasons are the dispersion of actions along the flow and the ensuing competitions that are detected throughout the chain. The other conclusion is that the picture presented by the health system demands from its managers at all

levels strategic planning of the actions in order to establish a shared view of the chain to transform the levels of competitiveness within the chain into the generation of value for the community.

The second objective, “analyze the processes that compose the value chain”, led to the conclusion that there are several processes in the value chain that affect both the internal integration and the external actions in the supply chain. However, due to the previously indicated fragmentary condition of the chain, the processes also follow the same route and become inefficient in guaranteeing the supply of value to the users. The processes that are realized take place without the perception of correctness, because they are prioritized mostly in order to guarantee budgetary grants for the municipality, and not to provide better conditions at lower costs for the users. This condition affects the integration of the Supply chain, and, since it does not present standard processes, it loses the potentialities of offering value to the users, to the exception only of processes related to the SUS that determine the financial support of the basic health chain in the municipality.

In relation to the third objective, “verify the deficiencies and the possibilities of improvement in the units that compose the value chain”, it was asserted that the several units justify their inefficiency in providing its services mainly by blaming the lack of financial resources. The main deficiencies in the units that are part of the supply chain are the lack of adequate physical conditions, the lack of medicines, the lack of equipment and systems, and the lack of human resources, all these hampering the supply of services to the users of the system. Considering these aspects, there is plenty of room for improvement, but the initiatives in this direction must be developed together by each and all the other units in the chain, thus reducing the want for resources or the inadequacy of these resources. An example of such would be the participation of the Department of Health in the projects and construction of the health units in order to adapt them to the needs of the family health program (PSF).

As to the fourth objective, “Analyze the deficiencies and possibilities for improvement of the links or interfaces of the value chain”, it was concluded that the several interfaces are presenting deficiencies primarily in the needs of internal and external integration of the Supply chain. This conclusion was drawn through the verification of the basic flow of users that at present shows only corrective treatments, to the contrary of what the PSF, recently implemented in Bom Despacho, proposes. Since the plan implementation is very recent, it is believed that the several components of the system are not totally familiarized with the needs of the interfaces required by the supply chain. Besides, the possibilities for improvement are found mainly in the actions that can be developed by the leaderships at all levels in the community of Bom Despacho, all of them aiming at reaching the integration of the supply chain. Another conclusion reached in relation to the characteristics of speed and performance measures, was the need to establish adequate levels of capacity for each link, such as in the case of determining the amounts and characteristics of drugs to be kept in each unit of the supply chain. The deficiencies in the integration and speed of medical services are, at first sight, a consequence of the indefiniteness of evaluation criteria for performance measures that may allow the follow up of the correct development of the flow of information, materials, and services through the links or interfaces in the supply chain.

The fifth objective, “Analyze the integrated and collaborative actions which are able to bring meaningful gains to the health services in Bom Despacho”, led to the conclusion that several institutions, both private and public, can contribute for the development of health in the municipality. Such contributions can be as simple as the publicizing of the health system, thus increasing the knowledge level of users about their direct participation in the improvement of the services. Further, there are other practical actions involving help in treating community health or the collection of resources that may bring better responses to the users’ needs.

Suggestions related to the work itself based on the conclusions drawn from the study, and responding to the priority of actions that indicated the need of organizing local leaderships under the leadership of the health secretary and the mayor of Bom Despacho, these measures were taken in order to integrate the supply chain both internally and externally.

The next conclusion is about the need of informing the population about the changes in the present model, sensitizing the social groups in the community, through different public actions, about the

health system management. This is one of the minor deficiencies found in the supply chain, but even some of the health system workers are misinformed about it.

Another source of information that may also generate new goals for projects and solution proposals is found with the users or with their representatives in the Municipal Health Council. This Council may be an even better source because, despite its political variables, it is a definite and important influence on some units that are fundamental to the integration of the supply chain.

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