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Health care networks under the light of the complexity theory

Redes de atenção à saúde sob a luz da teoria da complexidade

Redes de atención a la salud bajo la teoría de la complejidad

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ABSTRACT

Objective: To reflect on the framework of the Healthcare Networks under the light of the principles of Edgar Morin's Complexity Theory. **Methods:** This is a theoretical reflection **Results:** This reflection was organized into three acts: first, presents a historical overview of Healthcare Networks in Brazil, secondly, the connection between the Healthcare Networks and the principles of Edgar Morin's Complexity Theory; third, is exposed some challenges to the construction of the Healthcare Networks in the perspective of complexity. **Conclusion:** The connection between the assumptions of the HCN and the principles of Complexity Theory suggest the possibility to deepen the understanding of both the difficulties and possibilities of social transformation in the Brazilian public health service, in pursuit of the implementation of comprehensive of healthcare.

Keywords: Delivery of Health Care; Health Services; Unified Health System.

RESUMO

Objetivo: Refletir acerca dos princípios que norteiam as Redes de Atenção em Saúde sob a luz dos princípios da Teoria da Complexidade de Edgar Morin. **Métodos:** Trata-se de uma reflexão teórica. **Resultados:** Esta reflexão foi organizada em três atos: primeiro, apresenta-se uma contextualização histórica das Redes de Atenção em Saúde no Brasil; segundo, a conexão entre as Redes de Atenção em Saúde e os princípios da teoria da complexidade de Edgar Morin; terceiro, expõe-se alguns desafios para construção das Redes de Atenção em Saúde na perspectiva da complexidade. **Conclusão:** A conexão existente entre os pressupostos das RAS e os princípios da Teoria da Complexidade sugere a possibilidade de se aprofundar o entendimento, tanto das dificuldades, como das possibilidades de transformação da realidade do serviço de saúde público brasileiro, em busca da implementação da prática da integralidade da atenção à saúde.

Palavras-chave: Assistência à saúde; Serviços de saúde; Sistema único de saúde.

RESUMEN

Objetivo: Reflexionar acerca de los principios que guían las Redes de Atención en Salud (RAS) bajo la luz de los conceptos de la Teoría de la Complejidad de Edgar Morin. **Métodos:** Reflexión teórica. **Resultados:** Esta reflexión se organizó en tres actos: presentación de una revisión histórica de las Redes de Atención en Salud de Brasil; conexión entre las Redes de Atención en Salud y los principios de la Teoría de la Complejidad de Edgar Morin; y exposición de algunos desafíos para la construcción de las redes de salud en la perspectiva de la complejidad. **Conclusión:** La conexión entre los supuestos de la RAS y los principios de la Teoría de la Complejidad sugiere la posibilidad de profundizar el conocimiento, tanto de las dificultades, como posibilidades de transformación social en el servicio de salud pública brasileño, en la búsqueda de la aplicación de la integralidad de atención de la salud.

Palabras-clave: Prestación de atención de salud; Servicios de salud; Sistema único de salud.

INTRODUCTION

The Unified Health System (SUS) in Brazil, among its objectives, provides healthcare to people through actions of promotion, protection and recovery of health, with the realization of integrated care actions and preventive activities[1]. Over the 25 years of its existence, SUS has been progressing with the continuous restructuring of its laws, resolutions, ordinances, policies and programs of health, aiming to reaffirm its principles and guidelines and qualifying the healthcare.

However, even with so many advances, we are still experiencing a scenario that is characterized by visible fragmentation of services and actions. The search for integration in healthcare is not an easy task, especially for multifactorial character involved in the dynamics of operation of this complex system, which covers different levels of care (primary, secondary and tertiary), diversified sources of funding, professionals from various backgrounds and specialties, structural disparity and technological resources, in addition to the variety of the public user of this system.

The complexity of the process of constituting a unified and integrated health system in Brazil is expressed mainly by the diversity of regional contexts present in the country and the distinct health needs of the population between regions. Allied to this, adds the challenge of dealing with the complex interrelationship between access, scale, scope, quality, cost, effectiveness and the high weight of the private offering, with its interests and pressures on the healthcare market[1].

The evolution of the SUS management process brings the idea of a network for effective consolidation. Thereby, healthcare networks (HCN) were described by the Ministry of health (MS)[1] as restructuring strategy, especially as regards overcoming fragmented mode of operating assistance and management in health, in order to ensure users the set of actions and services they need, with effectiveness and efficiency.

The HCN are considered polyarchic organizations sets of health services, linked together by single mission, common goals and a cooperative and interdependent action. Seeking to offer continuous and integral care to the population, and should be coordinated by primary health care, with a view to the delivery of health services at the right time, in the right place, at the right cost, with the right quality and in a humanized manner[2].

Within the complex system of Brazilian healthcare, we believe that any reflection on this subject cannot be parsed in a linear way of thinking, but rather under multiple dimensions. Thus, we glimpse the importance of understanding the interconnections of the points that conform, having as theoretical-philosophical Theory of Complexity Edgar Morin support, to subsidize the expanded analysis on the complex phenomena.

The theory of Complexity of Edgar Morin considers, in general terms, that "we live under the Empire of the principles of disjunction, reduction and abstraction"[3:11], known as paradigm of simplification, and advocates, on the other hand, the necessity of complex thinking[3]. This thought attempts to grasp the multidimensional realities, recognizing the interplay of interactions and retroactions, revealing more capable of facing the complexities that to give in to ideological Manichaeism or the technocratic mutilations that only recognize arbitrarily compartmentalized realities[4].

Thus, such a reference appears to offer resources to illuminate understanding of the HCNs, in order to foster their best operationalization. Edgar Morin[3] questions hyper-specialization and fragmentation of the complex fabric of reality, knowledge and practices, farmers with technological advancement, leading for a reduction of the complex to the simple. In our perception, it is possible to dialogue between this line of thought and the phenomena involved in the pursuit of completeness of the HCN components of SUS.

Therefore, the objective of this study was to reflect on the principles guiding the HCN, on the principals of the Edgar Morin's theory of Complexity.

HEALTHCARE NETWORKS

Fragmented systems, incidentally, hegemonic, organize themselves in isolation and without communication between the points, as the primary care compared to secondary and tertiary showing themselves unable to provide continuous care to the population. In contrast, integrated systems, namely healthcare networks (HCN) are organized for coordinated sets of points for continuous and integral care to a defined population[5].

The HCNs have been proposed for the first time in the Dawson report, published in 1920, however, are considered recent proposals, since they were originally known in the implementation of integrated healthcare systems, in the first half of the years 90, in United States[5].

In Brazil, the HCN implementation is fairly recent, but its concept has been worked since the healthcare reform that culminated in the construction of SUS. In the Federal Constitution of 1988[6] article 198 proposes integrated actions in health to establish that "the public health actions and services 'integrate' a regionalized network and hierarchical and constitute a single system based on the guidelines of decentralization, full care and participation of the community"[6]. The organic law nº 8080[7], promulgated in 1990 and establishing the SUS, the entirety of the assistance is understood as a set of actions and articulate and continuous services.

Despite this new health system configuration, only in 2010 guidelines were established for the organization of HCNs under SUS[1]. In this document, the HCNs are renowned as "organizational arrangements, and health services, of different technological densities are integrated by means of logistic and technical support systems of management and seek to ensure the completeness of the care"[1], seeming to be more aligned with the complex structure that configures a medical system.

The main features proposed by the HCN are formation of horizontal relations between points of attention, Communication Center primary health care; centrality in the health needs of a

population; accountability in continuous and integral care; multidisciplinary care; sharing objectives and commitments with the healthcare and economic outcomes.

The HCNs have been considered an important factor of cost rationalization and best use of healthcare offerings available[8]. On systems with this organization, the resources can be better utilized provided they are perfected mechanisms for incorporating technological and user access to different services, and achieving economies of scale and scope in the composition and their organization.

CONNECTION BETWEEN HEALTHCARE NETWORKS AND COMPLEXITY THEORY

The health system is a structure characterized by the multidimensionality of the issues involved in their interrelation with other sectors of society, consequently, causing direct or indirect impact on the health-illness process. This impact is suffering and causes changes in the context of ethical, ecological, epidemiological dimensions, strategic, educational, transcendental, and economic and political psycho-socio-cultural health sector[9].

This complexity of the health system shows us the amplitudes of the connections and interconnections that take place inside and outside the system. These and other dimensions are also components of other systems that interact with the health system, such as the agricultural and food system, the criminal legal system, environmental system, the system of Government, the educational system, among others[9].

It is in this multidimensional system, with multiple connections and interrelations, which configure the HCN. In addition to the complexity of the system in which they are inserted, the formation of a network, with its various intersections, can also be considered a complex phenomenon because each connection between their points has its own characteristics, since they involve professionals and users with different characteristics; in different contexts and situations.

Wrapped in complexity we realize that the principles of Morin's complex thinking[10] it enabled us to take a more comprehensive look at the HCN, reflecting the ways of thinking, as opposed to reductionist mechanisms; considering the multidimensionality of the phenomena and all the influences received (internal and external). Given the above, we describe the principles of Morin's complex thinking, exemplifying its applicability for the HCN in the context of SUS:

The Principle Systemic or Organizational shows us that the HCN cannot be viewed in a fractional manner, but rather we must understand them as a complex movement in which all the services that integrate in SUS making up the whole, and in each one there is a longitudinal inter-relation delights all, formed by several parties.

The principle Hologrammatic emphasizes that "not only the part is in whole, but all are in each one of the parts that make up the whole"[3:74]. The individualistic and fragmented form of work breaks with the holographic principle, hindering the entirety of healthcare. In the performance of healthcare professionals, we perceive that there is no integrated care. Unfortunately, every professional working in isolation as if the concept of integrated care and network (which sets the "all" in this case) was not in his heart. Although most perform their care on an individual basis, knows the need of joints and connections with other professionals and services to provide continuity of care. It is important that health professionals understand their role within the network and that constitute a fraction of a mechanism that only works if all work allowing free flow between their different points, which manifests itself in teamwork within the network.

The principle of the Retroactive Circle is based on the idea of circularity or recursion, in which the retroact effects on the causes and the fed back. This is the evolution of linear causality (cause and effect) to a nonlinear relationship, which circulates between cause and effect. We can reflect on the movement in which people perform in the HCN, a non-linear movement in its various levels. In the daily lives of health professionals activities are focused on curing the disease, leaving aside the prevention of diseases and health promotion. So, we can interpret this care as a movement that people enter and are served on top of his illness, but are not monitored until they get back the balance of health-disease process, and thus, care ends up focusing only on immediate care, not developing the circular motion. What we question is that without investment in the disease prevention and health promotion, won't these people are not patients of tomorrow? What we believe is that they will always be in a giant circle, in pursuit of health. We affirm that, while we our only an assistance in the curing of diseases, not focusing on disease prevention and health promotion, in different points of the HCN, people will always need treatment and unfortunately, will never be independent individuals in their health-disease process.

The principle of the Recursive Circle brings what living things produce themselves, their constituent elements and self-organizing themselves through this process, what makes them overcome the notion of adjusting to self-production and self-organization. With regard to this principle will quote the pillars of the HCN that are users, managers and health professionals. These pillars are producers and at the same time products of the network[11].

In the day-to-day, we can demonstrate through the cases where the results or the assessment of health services does not show good results. In these cases, it is necessary to rethink how the service has been offered and revamping of healthcare strategies, because the results are always the consequence of actions. Thus, it is understood that the interaction between action and result, establishes the dynamics of changes that constitute the process of self-organization.

The principle of Auto-eco-organization considers that organizations have the ability to organize (self-organization), but their autonomy depends on energy, and information about the outside world or environment. Considering the HCNs as organizations, we can assume that they are dependent on the responses of the population receiving health services and their own professionals

and managers who act on these actions. Thus, are (re)organized both according to the demands that the population presents, as according to the knowledge and experience that professionals and managers have to do.

In this sense, one can see that the networks are constantly (re)organization, because both the needs of the users, such as the training and experience of health professionals change continuously according to the time and context where they meet. In addition, we can think in networks as living organisms that pass through the process of life and death. That way, we understand that, as well as in living organisms, where cells die and are born constantly; in the networks various actions/conceptions and projects will end, so that innovations may arise according to new demands and conceptions. It is important that the actors involved in the HCN understand this dynamic process, as inherent in the proper functioning thereof and that both the configuration of the network services, such as the actions on health must be constantly rethought (and often modified).

The term Dialogic means that: "two logics, two principles, are United without that duality is lost in this unit"[12:189]. Thus, the principle Dialogic demonstrates the importance of living with diversity of ideas and situations, which although sometimes antagonistic, are part of the context. Considering the differences and diversities, which constitute the process of care in health, this principle allows observing how the Organization deals with conflicts, uncertainties and instabilities in their routine. For the establishment of an effective joint required HCN services, establish routines and ordinances[13], however, moments of "disorder" in the process are common and inherent in organizations. Health professionals must understand that in such a complex articulation of actions and services, will have to be faced with issues of disorder and that they need to be interpreted as moments to reflect if the network really being effective and fulfilling its objective of providing people continued and integrated care.

The principle of Reintroduction of knowledge in all knowledge (knowledge of the circular motion). For Morin[10] this principle assumes that "all knowledge is a reconstruction or translation for a brain, a culture and a certain time"[10:211-12]. In this sense, one can predict that in each context the "networks" have specific joints and will structure according to the regional, cultural and social characteristics of them. Through this principle, it assumes that knowledge can be understood in different ways, depending on situations and people that are involved and it is from the interaction and Exchange, that it will be built and rebuilt. In such a vast country and regions with very different socio-economic and cultural characteristics as in Brazil, it is possible to understand the importance of this principle by holding that in every region of the country, the networks can be configured in different ways, considering the peculiarities of each culture and designing health of the actors involved in this process.

CHALLENGES FOR HCN CONSTRUCTION IN THE PERSPECTIVE OF COMPLEXITY

The effectiveness of the HCN in Brazil is undoubtedly a huge challenge to be faced by users, workers and health managers accustomed to focusing on the parts and not the whole articulated and interdependent care of the healthcare system[14]. In addition to the cultural aspects of those involved, SUS faces serious structural and cyclical problems that influence negatively on the health of the population, such as underfunding, inefficient staff recruitment policies, among others, that generate immediate results of inefficiency; situation impedes the implementation of new strategies that depend on the motivation and participation of those involved.

The HCN, theoretically, are organized in increasing degrees of complexity, where the population should take advantage of various levels through consistent flows. However, in practice, this flow is hindered in a truncated and disjointed, bureaucratic operation that does not take into account the needs and the actual movements of people within the system, which makes it slow and in many cases with unsatisfactory results. As an orchestra in which each instrument plays a different song, the disharmony is installed, users enter in the system for all ports and forms a maze with different paths to be taken and that, often, are not understood by them and not even by the professionals that are part of this complex process.

The networks themselves do not complement each other, the hierarchy and organization are incongruous and, at the same time present the conditions for the HCN development, professionals act as disorientated, trying to work in this perspective, but still unable to perform what if aims to ensure, namely a full, continuous and effective service to users.

HCN management requires flexibility and dynamic look with regard to possibilities of existing technologies and resources, linking possibilities that return to problem solving in health, converging into real changes in indicators and in the satisfaction of users. One cannot specify a unique way as the best and ideal to organize services within networks, but need consistency and adaptation to social reality and needs of the population, so that the flow networks and are not defined as a tangle of threads with incommunicable tips.

As officially established, the operationalization of the RAS should be by the interaction of three main elements: population and health region defined, operational structure and logical system of operation, determined by the model of attention[15]. We believe that the discussion of these elements by those who are involved with the previously mentioned operation, based on the principles of the theory of complexity, one can encourage their qualification, approaching the reality of the HCN, to what is proposed in terms of ideas.

CONCLUSION

By connecting the ideas of HCN with complexity theory from the principles or Systemic Organizational, holographic, Retroactive Circle, Circle Recursive, Auto-eco-organization, Dialogic and knowledge of circular motion, we realized that it was possible to reflect on the reality of the Brazilian public healthcare system.

Health professionals live with a complex healthcare system, which has services with routines and rules extremely locked and bureaucratized and which impede the dynamic movement and integrated health care advocated by the HCN.

Specifically noting the HCN assumptions and the existing connection between these and the principles of the theory of Complexity, opens the possibility of deepening the understanding of both the problems and the possibilities of transforming the reality of health services, in pursuit of practical implementation of these assumptions, resulting in reference to integrality of healthcare.

It is expected that the reflections raised in this study may excite innovations in existing healthcare policies and healthcare systems organization in networks designed by the light of the complexity in order to generate flexibility and upgrading of the system from the regional diversities.

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