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ECOSYSTEMIC APPROACH: A CHANCE TO BUILD SUSTAINABLE KNOWLEDGE IN NURSING/HEALTH

Abordagem ecossistêmica: uma possibilidade para construir conhecimento sustentável em enfermagem/saúde

Enfoque ecosistémico: una oportunidad para construir conocimiento sostenible en enfermería/salud

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ABSTRACT

The global socio-economic model conceived and utilized by humans through time, has led to significant benefits for humanity. However, it has led to devastating changes in the social and environmental areas, causing repercussions in the nursing/health systems. This paper aimed to reflect on the current socio-economic model and its implications for social and environmental changes, and to propose an ecosystemic approach as a strategy to building sustainable knowledge to nursing/health. As a result of this study it is concluded that due to the complexity of the economic effects produced by the socio-environmental changes on human health, it has become necessary to invest in innovative ways to build knowledge and promote sustainable solutions. The health care/nursing is embedded in a complex system of constantly-changing dynamic interrelations, whose solutions can be found anchored in innovative, creative, non-prescriptive and non-deterministic designs, but constructed so as to be able to attain the path of sustainability desired.

Keywords: Nursing; Ecosystem; Knowledge; Science.

RESUMO

O modelo socioeconômico globalizado idealizado pelo ser humano e utilizado ao longo do tempo, promoveu benefícios significativos para a humanidade. No entanto, suscitou mudanças devastadoras sobre os espaços socioambientais, causando repercussões nos sistemas de enfermagem/saúde. Este texto objetivou refletir sobre o modelo socioeconômico atual e sua inferência nas mudanças socioambientais, assim como propor a abordagem ecossistêmica como estratégia capaz de construir conhecimento sustentável à enfermagem/saúde. Como resultado deste estudo, concluiu-se que, devido à complexidade dos efeitos econômicos produzidos pelas mudanças socioambientais, na saúde humana, tornou-se necessário investir em formas inovadoras para construir conhecimento e promover soluções sustentáveis. A área da saúde/ enfermagem insere-se em um complexo sistema de inter-relações dinâmicas em constante mudança, cujas soluções podem encontrar-se ancoradas em modelos inovadores, criativos, não prescritivos e nem determinísticos, mas construtivos, capazes de alcançar o caminho da sustentabilidade pretendida.

Palavras-chave: Enfermagem; Ecossistema; Conhecimento; Ciência.

RESUMEN

El modelo socio-económico mundial, diseñado y utilizado por los seres humanos a lo largo del tiempo, ha dado lugar a importantes beneficios para la humanidad. No obstante, planteó cambios devastadores acerca de las áreas sociales y ambientales, provocando repercusiones en los sistemas de enfermería/salud. Este trabajo tuvo como objetivo reflexionar sobre el actual modelo socio-económico y su implicación en los cambios sociales y ambientales, así como el enfoque ecosistémico para proponer una estrategia capaz de construir conocimiento sostenible a la enfermería/salud. Como resultado de este estudio, se concluyó que, debido a la complejidad de los efectos económicos producidos por los cambios socio-ambientales en la salud humana, se hizo necesario invertir en formas innovadoras de aumentar los conocimientos y promover soluciones sostenibles. El cuidado de la salud/enfermería está integrado en un sistema complejo de interrelaciones dinámicas en constante cambio, cuyas soluciones se encuentran ancoradas en diseños innovadores, creativos, no prescriptivos y no deterministas, pero la construcción puede alcanzar el camino de la sostenibilidad deseada.

Palavras-clave: Enfermería; Ecosistema; Conocimiento; Ciencia.

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INTRODUCTION

Throughout the twenty-first century, the human socio-environmental systems have been structured in cities, communities and organizations and on being influenced by the socio-economic model, have fallen ill. This fact is explained by its inability to adapt, renew itself creatively, construct new environments and inability to construct a new world. A world in which the environments are not characterized by waste, losses and environmental and social destruction; where receptiveness exists at work and outside it; intelligence can emerge and be energized based on a systemic set, with the clear aim of adapting and recreating, thus making it possible to develop the capacity of the human being to reconceive the questions from another perspective[1-4]. That is to say, an interconnected and recreating world, close to the resolutive power presented by the natural cosmos and not in the mechanical and unsustainable format as currently experienced.

Regarding the socio-environmental questions, it is necessary to reflect on presentday society and the changes which occurred in the second half of the last century. The negative influence which human beings have provoked in nature, in social relations, in the negation of subjectivity and in the forgetting of revered ethical/esthetical values are visible, negatively influencing the maintenance of society and the environments[5,6]. Thus, in the everyday and in the data widely disseminated by the media, one can perceive that the destruction of aspects which are relevant to socio-environmental existence is favoring singular and collective unsustainability. This question evidences concerns for the continuity of life on the planet and demands the finding of innovative, wide-ranging solutions.

To this end, in the quest for another way of thinking/doing, it is mentioned that the environmental crisis is, especially, a problem of knowledge, whose solution demands wideranging and complex understanding. It is, therefore, necessary to re-think the world, complexly, to extend new ways of knowing, in the sense of making it possible to reconstruct and re-appropriate the planet, even though the dominant reasoning of the human being has discovered the complexity based on the negative limits experienced in the social and natural everyday and through the alienation and uncertainty of the economized world[7]. The negative effects which drag all the uncontrollable and unsustainable processes, in this existential complexity of the social and natural processes, lead to a question which emerges consistently and objectively: how is one to find answers/solutions for the unsustainability of producing and living?

One possibility for finding relevant solutions to these processes of unsustainability can be obtained through an ecosystemic approach/thinking. Such an approach is understood as a new structure of conceptual and methodological reference or metalanguage in development, presented as an alternative to the classic conceptual structure, that is, of analytical thinking. Its objective is to treat phenomena and the situations which require explanations based on the inter-relation of multiple forces or factors. Further, they contemplate systemic ideas, theories and applied and connected approaches to the various fields of investigation such as health, engineering and economics, among others[4].

It is understood that the ecosystemic approach opens up as a possibility for constructing knowledge that, in an interconnected way, emerges, contextualizes and is capable of understanding the complexity of the phenomena which are presented. Thus, it is reasonable to renounce the prescriptive, deterministic, linear and absolute method which does not contextualize the facts and their circumstances, and opt for the ecosystemic approach. After all, to understand the current time and the relationships which emerge in the sustainable Being-Producing-Living, this work has as its aims: to reflect on the current socio-economic model and its inference on the socio-environmental changes and propose the ecosystemic approach as a strategy capable of constructing sustainable knowledge on health/nursing.

To this end, the following are addressed: initially, the question of the reigning socioeconomic model, from the perspective of the worker; next, the changes in health due to socio-environmental changes are discussed; and, finally, considerations are presented on the ecosystemic approach and the construction of knowledge.

GLOBALIZED SOCIO-ECONOMIC MODEL: THE VIEW OF THE WORKER

Human society structured and imposed a globalized socio-economic model which over time showed itself to be gradually pernicious to all the ecosystems on planet Earth. The following are considered relevant: quantification, the acquisition of material goods, expansion, competition and the obsession for heavy technology. Such factors result from the valorization of critical rationalism, of empiricism, of individualism, and of the manipulative thinking of the industrial era. The emphasis is on the values of expansion, self-affirmation and competition, which are related to the Newtonian notion of absolute and infinite space and time[8].

Following the way of thinking previously expressed is a reflex of linear thinking, the belief that if something is good for the individual it is good for the group, family and society, entailing imperious harm for all the systems. According to this logic, the search is for the object, product and quantity and not for the valorization of the process

which is undertaken by the human being through relationships, actions, subjectivity and quality. Thus, to understand this complexity of Being-Experiencing-Producing it is necessary to reflect on the form and the effects of the globalized socioeconomic model for the worker.

Globalization transformed and transforms society through generating new knowledges, economic productivity, political and military power and through means of mass communication. In the ambit of culture, action is about financial information, news, arts, sciences, entertainment and other cultural expressions, which lead to the sustentation of this model. However, all this interconnectivity has not generated positive aspects alone for society, as it has produced negative consequences for the poorer people and, principally, the environment[1,3]. Thus, the set of negative questions which are currently building up for the future scenario is worrying. In this direction, perhaps, human beings, with their capacity for thinking and transforming, may be the only beings competent and able to seek balance in this new capitalism. In this line of thinking, the new capitalism is one of the driving forces for globalization, being, up to a certain point, a mystery, as until now it is not possible to know exactly how it functions. It is considered like this because, in the global economy, the circuits of information function with such speed and utilize a multiplicity of sources, constantly reacting to a flood of elements which, in the system as a whole, escape control[1,3].

Regarding the human existential level, the most alarming characteristic of the new economy is the fact that it is fundamentally moulded and determined by machines. In considering the social impact, the new networked economy has profoundly transformed the social relationships between capital and work; the capital seen in the global aspect while the work is considered in the local aspect, leading to the existence of two types of workers: the 'generic' ones, who suffer easy social exclusion from the system; the second 'with training', is the more protected by the institutions, as their knowledge has economic value[1,3].

Based on these interconnections, it may be perceived that the structuration of the model is macro-strategic, as it influences and impacts on the financial, human, social and environmental organization. So, for the worker it becomes necessary to seek solutions through new knowledge and new strategies. These solutions must make it possible to act and to transform the socio-environmental space, allowing the interconnection of all the components of the reality experienced, and, thus, protect and achieve sustainability.

SOCIO-ENVIRONMENTAL CHANGES: CHANGES IN HEALTH

Based on what has been evidenced above, globalization has provoked profound socio-environmental changes, as it acts upon economic, social and ecological questions. Thus, the variables which exist are wide-ranging and innumerable, including: the congestion of vehicular traffic; chemical pollutants; the risks of radiation; physical and psychological stress; illnesses; the contamination of the water and the air by noise and toxic chemicals; the lack of technology for treating discarded materials such as chemical products; and, the utilization of non-renewable energy in production processes, such as fossil fuels[9]. It refers, further, to globalization being at the center of the problem, maintaining ecological short-sightedness and entrepreneurial greed, in not permitting reflection on new ways of obtaining clean energy and stimulating productivity which contributes to promoting the increase of destruction of nature[9]. The apocalypse has become commonplace from being so familiar, it is like a counterfactual of daily life, and, like all risk parameters, may become real[1]. In this way, the variables mentioned and others may cause ecological disturbances and human suffering unprecedented in the history of humanity.

Thus, maybe, more products and sources of energy may not be necessary, but a change of values, attitudes and lifestyles, as this model experienced is in an implacable pathological stage for maintaining human existence, as well as planetary.

Based on the United Nations Organization (UNO)[10], in relation to the Millenium Declaration, eight objectives are emphasized, which demonstrate the concern with globally balancing the planet. These are: 1. Eradicating extreme poverty and hunger; 2. Achieving universal primary education; 3. Promoting gender equality and empowering women; 4. Reducing mortality rates for children under five years old; 5. Improving maternal health; 6. Combating HIV/Aids, Malaria, and other diseases; 7. Ensuring environmental sustainability; and, 8. Developing a global partnership for development.

It may be perceived that the issues raised above are systemic and interdependent, as they deal with agricultural, industrial and political production and on how to live more healthily. Agricultural production suffers from the influence of climactic effects through shortages or excesses of cold, heat, rain, which in their turn influence industry; and both influence countries' economic development and maintenance. From a systemic viewpoint, in projecting formal, minimum education, this can permit growth in knowledge and consequently lead to the individual's self-management and, thus, enable the human being to participate in the search for systemic solutions and to improve her life/health and that of the group/society in which she is integrated.

The search for gender equality, through the empowering of women in the role of reproduction, in health care, in political action, and in the job market stimulates equality between the individuals. In combatting diseases, means of promotion, prevention and the devastating

effects, both singular and in collective form, are favored. All these actions open perspectives for environmental and social sustainability, through the search for balance in the ecosystems, producing positive local/global effects. After all, fostering a worldwide alliance for development is to propose a path for equitable development between countries, through transference of technologies, cancellation of debts and improvement of international commerce, among other procedures. Thus one can perceive that it is possible to create innumerable connections. However, it is necessary to find emerging forms/strategies for constructing innovative solutions in a wide, systemic sense, and the area of health/nursing is not located on the edge of this process.

> *In line with the Millennium Development Goals[11:3], it is highlighted that:*
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> *The MDGs encapsulate the development aspirations of the world as a whole. But they are not only development objectives; they encompass universally accepted human values and rights such as freedom from hunger, the right to a basic education, the right to health and a responsibility to future generations.*

The alert is given in relation to the individual, collective, social, and environmental questions which affect human dignity itself, and interfere with the present and future of a fair planet.

In seeking, specifically in the questions presented, a meaning in the area of health/nursing, one can perceive the need for growth in knowledge to improve the critical sense in the face of reality, such as to make possible an understanding of context, thinking about what can be experienced and how, based in values, for a healthier experience.

THE ECOSYSTEMIC APPROACH AND THE CONSTRUCTION OF KNOWLEDGE

Based on the socio-environmental changes discussed and which influence the ecosystems, the central and strategic concern is the achieving of sustainability for the system-planet Earth, and, in a more precise dimension, that of the Human Being herself, in the context of her existence. This understanding of the dimension of the difficulties comes from the unconditional prerogative of the development of innovative knowledge/science in the search for solutions. Thus, specifically in health/nursing, constructing knowledge, to meet requirements, is something which approaches as necessary and urgent. In this scenario, one can make out the possibility of applying the conceptual and methodological ecosystemic approach. This strategy is indicated because it makes possible for people new conceptions in thinking and to produce with wide-ranging capacity to resolve. This is because its elements, being interconnected, favor the recognition of the whole, of the interrelationships, of the processes of change, of the structures, of the patterns of behavior, of the mental models and of the circular causations. Understanding this circularity in thinking and constructing is not easy, as the world nowadays teaches to seek the parts, the objects, the instantaneous, the events, the analytical data, the superficiality of people's actions and linear causations[2,4,12]. However, it is understood that in being incorporated and applied in a determined context, this knowledge can create emerging and sustainable solutions, overcoming the prescriptive and deterministic way of thinking.

Considering studies, it can be argued that, further, the Systemic Thinking/Approach is significant, through bringing the *I* of the Personal Domain, which is expressively interrelated to greater systems, such as: thinking the change in *I myself* can be the leverage of the change of a complex reality, as this *I* is a creative and interdependent part in the system; if *I* do not grow, the whole is negatively affected[4,9]. Thinking in this way is to recognize that one can contribute creatively to create the future, as well as the present. This leads to the understanding of the *internal* structures and the inter-relations as *external* structures. Further, understanding a social reality is to recognize the mental models which create it. However it is often necessary for reality to be examined, reflected upon, verbalized and inquired into. Thus, the effectiveness and the reduction of the defensiveness of such a proposition involve the skill of reflection.

Following the same reasoning, anchoring efforts in Systemic Thinking, in the face of a determined complexity, can lead to a feeling of inability. The need is emphasized for shared vision, of knowing the systemic structures of the reality experienced and of the common proposal for obtaining creative energy and jointly seeking solutions. In this way, in a specific set, through the leverage of the Systemic Thinking, one can transform a complex reality into a future which is collectively desired. Following this, learning Systemic Thinking in a group or in the collective, is more efficacious. The group, in possessing the skill for learning jointly, has a broadened vision of systems, favoring the emergence of diverse variables. In this understanding, the group, in seeking new forms of learning, awakens to cognitive processes capable of creatively originating new ideas and opportunities, and designing strategies in difficult points, indicating opportunities which can be made out, although distant, on the road to be constructed[2]. Thus, the group, in the relevant questions and through the strategic designs, objectives, directives, environments and processes - systemic vision - can complexly influence, understand, plan, act on and transform realities.

The Systemic Thinking has specific characteristics and a set of ideas which structure it, such as: it passes from the parts to the whole, in the search for balance against reductionism and atomism; greater emphasis is on the whole, more than on the part; of the objects for the relationships, as these are the relationships which promote the dynamic of the codification of activities, operations and processes. Thus, the reality can be more easily understood through networks of relationships associated and incorporated in larger networks[2-4,9,13]. Further, in the hierarchies for the networks, there are no isolated parts. They are complex systems in interaction with various other systems and levels; there is no separation between the natural and social environments, not only because it is difficult to distinguish, but because they function inter-relatedly, forming a whole. Seen in this way, the Human Being herself is nature and must coexist with it, so as to, in harmony, create, produce and be realized. Thus, the interdependence and the coordination of collectivities of living beings creates a close contact, which structure a system as a large organism. The thinking is networked and the skill of understanding reality moves from one level to another.

The linear causality to circular allows an understanding of the reality through the circular, contextualized flows and not through relationships of cause and effect. Further, there is the change of structure for the process, as they are the processes which fundamentally establish the patterns of organization, materializing in a structure.

In sequence, there occurs the passage of the mechanical metaphor to that of a living organism and other non-mechanical ones, as the permutation of perception is through the demand of a world with complex thinking, which means a quantitatively and qualitatively superior repertoire of metaphors, models and points of view. In addition to this, there occurs the change of knowledge which is objective to that which is contextual and epistemic, as, in objective knowledge, subjectivity is neutral in the methodological process, although, in webs of observed relationships, summarized or resolved, the process is not *neutral*, depending widely on subjectivity, the interests, the beliefs and the paradigm of those who select it. Thus, the process of observation and construction of knowledge ceases to be objective and passes to be contextual and epistemic. Continuing, one can perceive the passage of truth to the approximate descriptions, as in the systemic posture all the conceptions, concepts and scientific theories are limited and approximated to the reality of the model, entailing the search for approximated descriptions in a context. Thus, it is contrary to the isolation of the object for being arbitrary, as all observation entails participation. On the road from quantity to quality, objects are abandoned and the emphasis passes to be on the patterns and forms. It changes from measuring to surveying and to visualization, to patterns and quality. Also, from control to cooperation, influencing nonviolent action, as the recognition of patterns of behavior in life promotes understanding that evolution depends on a balance between competition and cooperation, due to the tendency to symbiosis, to association and to interconnection. The attitude of domination, control and torture of nature, organizations and people is not sustainable, making it necessary to seek cooperative and non-violent behavior, in science and in technology, as in organizations and society.

The dynamic in the change of Thinking Systemically is to modify the mentality through changing attitudes and beliefs, triggered and created in the activation of the cycle of deep learning, that is, to change the existing culture[12,14]. Anchored in quantum physics, the diagrams of the S matrix show the channels of flow and inter-relationships of quantum particles, indicating that the ultimate particles of matter, the *bricks*, do not exist, but that patterns of interconnections which are extensions of other patterns of interconnections do. Things exist in virtue of their mutually consistent relationships. It is required that one should stop thinking of functions or people as fixed elements, as these lead to a world of *non-things*, where who one *is* depends on who one *finds*. Thus, *things* do not exist, but, structures derived from patterns of behavior of flows do[15].

Further, in the bootstrap philosophy, the material universe is conceived of as a network or web of dynamics of inter-related events. All the properties of any part of the network are essential, none can impose themselves on another, and the total consistency of its inter-relationships determines the structure of the network[3]. Such thinking, in health/nursing, is centered in considering that people/workers are more than elements *thingified/things/bricks*; the validation of energy structures channels and processes flows of energy: all are necessary for processing it.

Through this prism, a change does not manifest only in the perceptions and the way of thinking, but includes values, feelings, aspirations and emotions, substituting selfaffirmation for the integration and the hierarchical power for a system of influence[2]. Thus, the energy flows are equivalent to the relationships and, when stimulated positively, can construct knowledge, collective solutions and healthy/sustainable ecosystems. This System Dynamic constantly restructures itself and self-organizes through associations, relationships and interconnections. Thus, the sustainability of the ecosystemic environment, in supporting itself on principles of interdependence, the cyclic flow of resources, cooperation and partnership, constructs itself under different aspects of the same pattern of organization, as the ecosystems are organized, to maximize the sustainability of the space/place/territory[16]. In this complexity, it is relevant to think that the process of change

of a determined reality only becomes possible to happen if the people are capable of recognizing it, reflecting on it, and understand the need for change so as only afterwards to act and transform.

FINAL CONSIDERATIONS

The Socio-Economic Model, over time, has facilitated the development of technologies which benefitted the production and living of the Human Being on the planet Earth. However, during the development of the process, it became harmful to the natural and social systems, causing eminent danger to the maintenance of biodiversity. The impact of human action on the natural environment has caused socio-environmental changes, affecting the social and natural environments intensely and negatively. In this sense, the human being is involved in a complex web of issues which are inappropriate to her survival and that of the planet itself.

Based on this complex web of inappropriate issues arising from the socio-economic model adopted by society in producing and living, they are caused by innumerable impacts on the social and environmental changes. The ecosystemic thinking/approach emerges as a possibility for construction of knowledge in permitting the emergence of collective and innovative ideas. The conception of the ecosystemic approach favors conceptual and methodological reflection regarding the way of thinking; it considers the behaviors, the attitudes and the actions; considers if these are effectively ethical-esthetic and if they can lead to sympathetic benefits. Therefore, methodologically, the ecosystemic approach is aggregatory and promotes the emergence of the responses, being neither prescriptive nor deterministic. This methodological form can permit the human being to find another way of thinking, of constructing knowledge/science.

In relation to the area of health/nursing, it is necessary to understand that it is one of the elements of this infinite set of environmental and social inter-relationships. It is affirmed, in the face of the reality experienced in the area of health/nursing, that the questions are presented inserted complexly in the system which is a whole; which influences and is influenced, and because of this needs continuous constructions, adaptations and transformations, whose solutions are to be found anchored in innovative, creative, non-prescriptive and non-deterministic models, constructive and capable of achieving the path of the intended sustainability.

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