

# A System Theory Approach in Management of Community Health Centers (Mid-Level Health Organizations) in India

Paras Mal Soni<sup>1\*</sup>, Shilpi Khandelwal<sup>2</sup>

## ABSTRACT

Health-care delivery in India has been developed at three levels specifically, primary, secondary, and tertiary. The secondary level of health-care basically includes Community Health Centers (CHCs), constituting the First Referral Units. The health-care system is that the organization (e.g. hospital, clinic, and nursing home) that has infrastructure and completely different complementary resources to support the work and development of care teams and microsystems. In open system theory, each system and its subsystems adapt to internal and external demands and feedback. Demands external to the health-care organization cover environmental factors (e.g., labor market, legislation, and population characteristics). Health-care organizations try to use a system that is functioning in response to feedback and informational signals to counteract lacuna. The application of system theory at mid-level will enhance the further managerial promptness at this level. In this paper, we described system theory as the process of identifying the systems of health-care delivery at the CHC level and subsystems with in CHCs and its interactions with environment and other systems.

**Keywords:** Community health center, Health-care delivery, Open system

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## INTRODUCTION

System will be found in nature, in science, in society, in an economic context, and inside data systems, a particular characteristic of systems theories is that is developed at the same time across numerous disciplines with students function form a systems theory perspective rest on the data and ideas developed inside alternative disciplines. A basic notion of general systems theory is its focus on interactions. The center in relationships results in sustain that the behavior of one autonomous part is totally different from its behavior with other once when it interacts. Health care is that the product of a complex adaptive system of individuals, equipment, processes, and establishments operating along. Issues will arise with either deficiencies in individual system components, or in their relationship with one another, and rising the performance of such a system will be difficult. This insight – a systems view of health care – reframes our understanding on, however, care is delivered and may be improved.

## Systems Theory

Systems theory is interdisciplinary theory concerning each system in nature, in society, and in several scientific domains further as a framework with that we will investigate phenomena from a holistic approach. System theory is essentially involved with issues of relationships, of structures, and of reciprocity, instead of with the constant attributes of object. Webster defines a system as a “regularly interacting or mutually beneficial cluster of things forming a unified whole,” that “is in, or tends to be in, equilibrium.” Negandi says that “a system’s attributes that square measure the interdependence and interlocking of varied subsystems inside a given system, and therefore the tendency toward attaining a balance, or equilibrium forces one to suppose in terms of multiple exploit in distinction to the common habit of thinking in single-cause terms.”

**Types of Systems:** The three major views of organizations square measure a rational system, a natural system and an open system. The rational system and, therefore, the natural system tend

<sup>1</sup>MSc Nursing, Phd Scholar, Department of Management, Jagannath University, Jaipur, Rajasthan, India

Professor, Department of Management, Jagannath University, Jaipur, Rajasthan, India

**Corresponding Author:** Dr. Paras Mal Soni, Department of Management, Jagannath University, Jaipur, Rajasthan, India. E-mail: paras1814@gmail.com

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to look at the organization as a closed system, that is, cut loose the atmosphere. In distinction to closed systems, within the open system, organization is hospitable and obsessed on the atmosphere, especially, connections with external and internal elements.

These three system views are concisely represented in the following section.

**Closed Systems:** This approach is that systems square measure freelance of environmental influences. Closed systems specialize in internal elements such as variables of size, technology, location, ownership, social control methods, and leadership vogue. Thus, this approach will be applied at the technical level of the organization as a result of it’s necessary to scale back uncertainty.

**Open Systems:** Scott proposes “all systems square measure characterized by an assemblage or combination of components whose relations build them mutually beneficial however they conjointly counsel the bases for the variations among them.” The components of system square measure a lot of complicated and variable, once systems move from mechanical through organic to social systems. Norbert Wiener describes this affiliation of variables in system as “an organization we tend to should think about as one thing within which there’s a reciprocity between the many organized components however within which this reciprocity has degrees.”

Components of a System: Elements of a system square measure the factors or components that square measure concerned within the processes of a system. They'll have an effect on the system and should be affecting from it. A component of a system could also be a district of the method of quite one scheme, for example, structures in a company, the skin during a living creature, etc. Subsystems or components of a system square measure system at the amount below the one among that they're components. Every of a living system's scheme, just like the system as a full, keeps variety of variables in steady state. A system's perform and structure could also be studied, analyzed, and represented through basic subsystems.

### Aim of Study

The purpose of this paper is to present findings of a theoretical review related to system theory approach of Community Health Centers (CHCs).

## FINDINGS

### Health-Care Delivery and System Theory

The health-care delivery system was delineated as a "cottage industry." The most characteristic of an industry is that it contains several units in operation severally, every centered on its own performance. Every unit has tidy freedom to line standards of performance and live itself against metrics of its own selecting. In addition, cottage industries do not usually plan to standardize or coordinate the processes or performance of Unit A with those of Units B, C, and so on. Health-care delivery in Bharat has been developed at three levels specifically primary, secondary, and tertiary. The secondary level of health care primarily includes CHCs, constituting the First Referral Units and also the subdistrict and district hospitals. The CHCs were designed to supply referral health take care of cases from the primary health centers level and for cases in would like of specialist care approaching the center directly. Indeed, this can be associate degree apt characterization of this health-care delivery system. Even in several hospitals, individual departments operate a lot of or autonomously less, making questionable "silos." Several physicians practice independently or in little teams, and ambulant clinics, pharmacies, laboratories, rehabilitation clinics, and alternative organizations – although a part of the delivery system – often act as freelance entities. We regularly decision this arrangement a "health care system," moving from this conglomeration of independent entities toward a "system" would force that each collaborating unit acknowledge its dependence and influence on all alternative units. Every unit should not solely achieve high performance however should additionally changing attitudes to embrace cooperation and systems "thinking" may be very tough and will encounter resistance. However, a joint, visible commitment by management is going to be necessary to realize this new manner of thinking as an enormous step toward the enhancements known in Crossing the Quality Chasm.<sup>[1,2]</sup>

The health-care system is that the organization (e.g., hospital, clinic, and nursing home) that offers infrastructure and various complementary resources to support the work and development of care teams and microsystems. The organization may be a vital lever of amendment within the health-care system as a

result of it will provide associate degree overall climate and culture for amendment through its numerous decision-making systems, operational systems, and human resource practices. The organization encompasses the decision-making systems, data systems, operational systems, and processes (financial, body, human resource, and clinical) to coordinate the activities of multiple care teams and supporting units and manage the allocation and flow of human, material, and cash resources and information in support of care teams. The organization is that the business level, the extent at that almost all investments area unit created in data systems and infrastructure, process management systems, and systems tools.<sup>[3]</sup>

In any large system that has several subsystems, achieving high in operation performance for every system whereas taking under consideration, the mutual influence of subsystems on each other and on the system as a whole may be a frightening task. A straightforward pictorial description of interacting components in an exceedingly system could also be useful for understanding however the system works. However, a deeper understanding invariably involves making a mathematical description of subsystems, their performance, and their interactions. This, in turn, needs a model, that is, associate degree abstract illustration of, however, the system operates (a mathematical type which will be wont to analyze the system) that has parameters that verify the performance of every subelement of the system, similarly as descriptions of interactions. The model may be a tool for simulating the performance of the particular system.<sup>[4]</sup>

### CHCs as an Open System

The theoretical foundation of the health-care organizations is open system. Theory as applied to large-scale organizations by Katz and Louis Isadore Kahn. In their view, an organization constitutes as energetic input-output system. A concern depends on its supporting atmosphere for continued inputs to create positive its continuity and processes these inputs through the revenant and blotched activities and interactions of individuals to yield outputs. A concern is, therefore, primarily a social structure.<sup>[5]</sup>

As such, a concern and its subsystems arrange to attain a dynamic steady state whereby regularities in energy flow preserve the character of the system and disturbances prompt system adaptation. To survive, a concern has to counteract entropy, that is, an inevitable technique of disorder and dissolution caused by loss of inputs or by inability to remodel energies. An open system ought to acquire negentropy (i.e., negative entropy), generally through some variety of storage capability, to form certain its continuing existence.<sup>[6]</sup>

Although the size and staffing pattern of CHC is similar to small-scale organization but due to its nature toward similar social structures such as communities, common organizing principles, like a rigorously controlled core with greater flexibility at the nodes of the network, and other properties that recur, such as the increased role of management – it is considered as open system. Based on the case studies, it will be offer a revised definition for the analytic conception of "open systems" and it's attainable to contemplate a system to be "open" if it's ready to exchange energy, matter, and data with environment. And therefore, the CHC has all these specifications. These exchanges cause internal processes of transformation of components such as physiological state, self-regulation, equilibrium/balance, autopoiesis, and equifinality/ common definiteness.<sup>[7]</sup>

In open system theory, each system and its subsystems adapt to internal and external demands and feedback. Demands external to notice organization embrace environmental factors (e.g. labor market, legislation, and population characteristics). CHCs endlessly adapt system functioning in response to feedback and informational signals to counteract entropy. For example, familiarizing structure policies to satisfy performance targets set by external agencies exemplifies the dynamic interaction between the organization and its external atmosphere.<sup>[6]</sup>

At the aim of care, each health-care subsystem in addition adapts to and interacts reciprocally with the opposite organization subsystems. The management, supportive, maintenance, and accommodative subsystems coordinate and apportion the flow of energetic inputs and establish the structures necessary for the completion, evaluation, and renewal of health-care add production subsystems. Internal demands of health-care subsystems relate to the character of the work performed, structures arising from the division of health-care labor, and so the work conditions at the aim of care. Feedback includes structure performance indicators, for example, longer than expected length of keep or time on program. The dynamic interdependence among subsystems, the organization, and so the external atmosphere is illustrated pattern the instance of emergency department overcrowding and one in each of its projected solutions, the introduction of health-care provider.<sup>[6]</sup>

In response to pressures to reduce state of affairs (i.e., external demand), subsystems would counsel and implement the projected resolution (i.e., accommodative function); rent the nurse practitioners (i.e., supportive function); formalize policies to alter the work of nurse practitioners (i.e., maintenance function); and integrate these changes across theme, role, and hierarchical boundaries to form certain neutral buy-in and to watch performance (i.e., management function). The emergency department (i.e., nursing production subsystem) would redivide the labor to accommodate the new role and so the work performed (i.e., internal demands). By sterilization the staffing mix (i.e., inputs), service capability (i.e., throughput) is inflated, resulting in reduced overcrowding, and inflated client satisfaction (i.e., structure and clinical outcomes). In turn, as a result of health-care provider usually interacts in medical care and health promotion, unnecessary for readmissions to the emergency department may be offset within the future.<sup>[6]</sup>

A system theoretical approach supported by analysis proof provides the desired holistic insight into understand the connection and effectiveness among the systems. An analysis reveals four intersystem relationships, aboard the failing vertical management, and communication between the quality measurement/reporting system and hospital-level care systems, and small or no concrete horizontal management and communication between the certification system and therefore the measurement/reporting system. Overall, the health administration systems do not nonetheless have important positive impact on the quality of care.<sup>[7,8]</sup>

The additional implementation of system theory approach we will use system engineering. Systems engineering because the method of distinctive the system of interest, selecting acceptable performance measures, choosing the simplest modeling tool, finding out model properties and behavior beneath a range of eventualities, and creating style and operational selections for implementation. Systems engineering approaches are instrumental in coordinating the expansion, operation, and synchronization of the many information-rich and technologically advanced economic sectors, most notably producing,

transportation, and provide chain supply. Whereas we have a tendency to square measure excited regarding the long run of health-care engineering and anticipate its final success in serving to health-care delivery, we have a tendency to believe widespread success can only come when a critical mass of health-care organizations acknowledge its worth through concrete examples. Only then can these organizations promote the structure changes required for its adoption.<sup>[1,2]</sup>

Information/communications systems may also give vital info to the patient for self-treatment of diseases and change in progress asynchronous communication between patients and care provider. Within the future, with the arrival of remote watching devices and wireless communication systems, information/communications systems have the potential to support continuous monitoring of a patient's health standing reception, fast designation by clinicians, and timely, and effective therapeutic interventions within the home by the patient or a loved one, with steering by health professionals. Moreover, by capturing method and system performance knowledge for analytic thinking, management and style, information/communications technologies will facilitate the employment of systems engineering tools by patient care teams, provider organizations, and environmental actors in the slightest degree levels of the health and health-care delivery system.<sup>[1]</sup>

### The Interactions of CHCs with Environment and Other Systems

Because the health-care system involves a myriad of interacting components, it's troublesome, or maybe not possible, for someone to possess a complete pic of the system while without using special tools to perform system evaluation. A model of the health-care system should embody an outline of "processes," as well as a good style of activities, from nurses administering medication on the hospital floor to examinations by a doctor to laboratory tests to the filling of prescriptions by a pill roller to innings visits by a nurse. The model should embody the role of every method in health, health-care delivery, and its interactions with different processes within the system. However, clinical components are not the only vital components in an analysis. The interaction between administrative components and different processes may also considerably influence the performance of the system from the patient and organization's point of view.<sup>[9,10]</sup>

The effectiveness of quality delivered by each subsystem at intervals the health-care systems hierarchy is set affected with totally different subsystems. However, analysis develops a model of using a systems theoretic approach for the effectiveness analysis among solely middle layer systems. There square measures enough attentions to the consequences from different systems; just like the structure context in hospital-level attention systems, patients, community, and therefore the role of state, we have a tendency to believe that the fundamental two pairs ideas of systems theory and therefore the system flow model will be applied to different layers within the health-care systems. This analysis can stimulate wider dialogue on the appliance of holistic analytic thinking for rising the effectiveness of systems on quality and safety in health care.<sup>[6,11,12]</sup>

### CHCs and State and Local Administration

Broadly speaking, the health-related activities of state and local government are public health, as well as health monitoring,

sanitation, and disease control; the finance and delivery of non-public health services as well as health care, psychological state, and direct delivery through public hospitals and health departments; environmental protection, as well as protection against synthetic environmental and activity hazards; and therefore, the regulation of the providers of medical aid through certificate-of-need and state rate setting yet as licensing and different functions.<sup>[13,14]</sup>

State and local government involvement publicly health began with the epidemics of the late 18<sup>th</sup> and early 19<sup>th</sup> centuries. A comprehensive and universal system of analyzing purposeful healthcare properties at the state level has been projected. By treating individual entities and health service establishments as agents among the framework of the idea of autonomous systems, the projected approach was wont to analyze the most forms of existing health-care delivery systems and allowed indicating their dysfunctions. It additionally served to propose a hypothetic, optimum model for the organization of attention at the state level.<sup>[4]</sup>

At the local level within the early 19<sup>th</sup> century, a trend toward the regular employment of persons to function the purposeful agents of native boards of health developed. State and local health departments became the most important vehicles by that these advances in each microbic science and environmental sanitation were created obtainable to the general public. As state and local health departments began to direct their attention to the causes of death and morbidity, they broadened and refined their activities. Services were created obtainable to the community at massive whether or not folks were sick or not. Programs and activities were developed to assist people who were thought about at the big risk of acquiring disease.<sup>[10,15]</sup>

At identical time, state and local governments were playing a progressively vital role within the delivery of personal health services, starting as poor homes a lot of involved with welfare than providing medical services, the almshouses of the 1700s and 1800s evolved within the late 1800s into town hospitals whose primary purpose was to deliver medical services. Within the early decennium, these hospitals related to with medical faculties and appointed regular staffs.<sup>[15,16]</sup>

### CHCs and Political System

The important aspect of the health-care system is that the political, economic (or market) environment, which has restrictive, financial, and payment regimes and entities that influence the structure and performance of health-care organizations directly and, through them, all completely different levels of the system. At present, several factors and forces at the environmental level, as well as compensation schemes for health-care services and a few restrictive policies, do not support the goals and objectives of patient-centered, superior health care organizations or the health, health-care delivery system as a whole. Although the national, the one largest client of health-care services, principal regulator, and major analysis patron, is, in many ways, best positioned to drive changes within the health-care delivery system, some private sector payer organizations and state governments square measure higher positioned to experiment with new mechanisms and incentives for rising the standard of care and creating health care more cost effective.<sup>[13,17,18]</sup>

### CONCLUSION

The system theories perspective is incredibly helpful in operating toward the development of individual and population health

by serving to identify management and structural problems at intervals within the CHCs. Challenges such as coordination, integration, effectiveness, efficiency, dependableness, accessibility, equity, public-private involvement, and community participation square measure all are necessary to contemplate within the delivery of health services. A systems approach has improved quality and price in other industries, and it might be equally transformative for health and CHCs. Indeed, a restricted variety of health-care organizations has seen substantial enhancements from their application. So as to be applied to CHCs, a systems approach would wish to include all of the weather influencing health, together with the interfaces among these totally different parts. Due to its comprehensive nature, there square measures multiple challenges preventing the widespread use of systems approaches, such as technological, cultural, and structural barriers. What is more, progress in spreading systems tools depends on centering these initiatives on patients and therefore the public, moreover, as partaking patients as important partners in their use.

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### REFERENCES

1. Fanjiang G, Grossman JH, Compton WD, Reid PP. Building a Better Delivery System: A New Engineering/Health Care Partnership. Washington, DC: National Academies Press; 2005.
2. Chokshi M, Patil B, Khanna R, Neogi SB, Sharma J, Paul VK, *et al.* Health systems in India. *J Perinatol* 2016;36:59-12.
3. Kaplan G, Bo-Linn G, Carayon P, Pronovost P, Rouse W, Reid P, *et al.* Bringing a Systems Approach to Health. Indonesia: NAM Perspectives; 2013.
4. Mele C, Pels J, Polese F. A brief review of systems theories and their managerial applications. *Serv Sci* 2010;2:126-35.
5. Kast FE, Rosenzweig JE. General systems theory: Applications for organization and management. *Acad Manage J* 1972;15:447-65.
6. Meyer RM, O'Brien-Pallas LL. Nursing services delivery theory: An open system approach. *J Adv Nurs* 2010;66:2828-38.
7. Bielecki A, Nieszporska S. Analysis of healthcare systems by using systemic approach. *Complexity* 2019;2019:6807140.
8. Petula S. Can applying systems theory improve quality in healthcare systems. *J Healthc Qual* 2005;27:6-2.
9. Altman DE, Morgan DH. The role of state and local government in health. *Health Affairs* 1983;2:7-31.
10. Panda B, Thakur HP. Decentralization and health system performance-a focused review of dimensions, difficulties, and derivatives in India. *BMC Health Serv Res* 2016;16:1-4.
11. Prashanth NS, Marchal B, Devadasan N, Kegels G, Criel B. Advancing the application of systems thinking in health: A realist evaluation of a capacity building programme for district managers in Tumkur, India. *Health Res Pol Syst* 2014;12:1-20.
12. Chuang S, Inder K. An effectiveness analysis of healthcare systems using a systems theoretic approach. *BMC Health Serv Res* 2009;9:1-1.
13. Bisht R, Pitchforth E, Murray SF. Understanding India, globalisation and health care systems: A mapping of research in the social sciences. *Global health* 2012;8:1-5.
14. Lega F. Organisational design for health integrated delivery systems: Theory and practice. *Health Pol* 2007;81:258-79.

15. Suter E, Goldman J, Martimianakis T, Chatalalsingh C, DeMatteo DJ, Reeves S. The use of systems and organizational theories in the interprofessional field: Findings from a scoping review. *J Interprof Care* 2013;27:57-64.
16. Almeida R, Benrey J, Freimark J, Houck M, Liu L, Messing M, *et al.* The Role of Government in the Indian Hospital System. Princeton: Woodrow Wilson School Graduate Policy Workshop Report; 2017.
17. David S. *Open Systems in Practice and Theory: The Social Construction of Participatory Information Networks*. New York: Cornell University; 2008.
18. Prashanth NS, Marchal B, Kegels G, Criel B. Evaluation of capacity-building program of district health managers in India: A contextualized theoretical framework. *Front Public Health* 2014;2:89.