BRAZILIAN`S PARTICIPATIVE COUNCILS: THE USE OF ICT IN THE CONSTRUCTION PROCESS OF PUBLIC POLICY NETWORKS AND CITIZEN PARTICIPATION

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ABSTRACT
The research developed in this study is an analysis of the National Health Council and the Subnational Councils, formed by the State Councils and Municipal Health Councils. It is a way of understanding the construction process of public policy networks and its role as the main citizen participatory space institutionalized by law in Brazil. This study presents the results obtained from a survey developed between the years 2006 to 2010, at the University of Brasilia. Its objective is to seek a broadening of citizen participation spaces supported by Information and Communication Technologies (ICTs), to form an effective network in for constructing sectorial policies in Brazilian healthcare. The current work aimed to fill in a gap in studies about improving citizen participation in Brazil, in order to establish new ways for expanding the network formed by the councils and the consequent improvement in the collaborative spaces within the decision making process.

Keywords
Information and Communication Technologies (ICTs), Citizen participation, Collaborative spaces
INTRODUCTION
Democratic Brazil is known for its participative institutions. During the elaboration of the 1988 Federative Constitution of Brazil, citizen participation spaces were created in several sector areas, including healthcare, social work and education. They are called Councils of Public Policies.

The research developed and described in this study is an in-depth analysis of one of the oldest Brazilian citizen participation spaces, the National Health Council and the Subnational Councils, formed by the State Councils and Municipal Health Councils. It is a way of understanding the construction process of public policy networks and its role as the main citizen participatory space institutionalized by law in Brazil, in the context of a representative democracy.

This work aimed to fill in a gap in studies about broadening and improving citizen participation in Brazil. The idea is that the study may contribute to establishing new ways for expanding the network formed by the councils and the consequent improvement in the collaborative spaces within the decision making process, stemming from the political network formed by the National Health Council and subnational Councils.

In accordance with the Brazilian Constitution (1988), the councils have legal jurisdiction in which there is an institutionalized space that provides for direct citizen participation, in constructing public policies. In accordance with its statute, the National Health Council was created like a commission, having different social sectors represented. The formation of the councils, in accordance with Federal Law number 8.142/90, paragraph 2° defines that the makeup of such institutions must be composed of different actors, who act in controlling the execution of healthcare policies. Health Councils are to be established by the law’s regulations and under the possibility of effective participation of organized civil society, which represents a pole for qualifying citizens to put into action Social Control in other spheres where the State acts.

The Health Council be it, National, State or Municipal in its constant and deliberative character is a collegial body composed of representatives of the government (managers), service providers (private entities), professionals of the Sistema Único de Saúde or the National Healthcare System (SUS). Its activities take place via the formulation of strategies and in the control of executing healthcare policies in the corresponding institution, including the economic and financial aspects, whose decisions are approved by the head of the legally constituted power in every sphere of government (BRAZIL, 1990).

Based on this, the current study presents the results obtained from a survey developed between the years 2006 to 2010, at the University of Brasilia. Its objective is to seek a broadening of citizen participation spaces supported by Information and Communication Technologies (ICTs), to form an effective network in for constructing sectorial policies in Brazilian healthcare.

The use of ICTs in expanding citizen participation spaces is justified by the continental distance that Brazil is endowed with as well as by the inequality of opportunity, access to information, complex government structure, experienced by the country after the Brazilian State was decentralized. We start with the principle that the structuring of government information and its availability must be in agreement with the necessities of the citizen. So, by using ICTs, access to information could be promoted and also the possibility that citizens with little or no familiarity with government processes and structures may also be able to increase their participation.

In Brazil, the National Councils, organs connected to the federal government, are institutions that allow the most direct connection between the citizen and power, since it is the institution that provides for institutionalized participation through laws and its internal rules. This fact justified choosing the National Health Council and subnational Councils as an object for studying Brazil’s social reality. Added to this, the Health Councils are a reality in 26 states and in the Federal District and in 5,700 Brazilian municipalities. Without its presence at every point in the Federation, there would be no planning of Brazilian healthcare policies.

When speaking of citizen participation in the decision making process in the context of Health Councils, it is a fact that we find several factors and barriers that determine to a greater or lesser degree its involvement in decision making or even in access to relevant information for understanding the Brazilian reality. Some factors necessary for there to be conditions for participation may be listed, for example: opening possible channels for communication; access and transparency of information; and developing continuing education. In the case of Health Councils, the barriers encountered are, in general, related to the imbalance of power among the actors participating in this process when accessing information and even in the responsibilities defined by each actor involved.

The present structure guarantees by law effective citizen participation, but the Brazilian reality reveals another situation. The great problem identified, as pointed out by users of the Brazilian Healthcare System, is that there is little power inside the council’s sphere of deliberation and there is a lack of information and means of communicating so that participation can take
place effectively. Such a problem signals a large gap in the opening up of participation spaces and for this reason it is considered that access to information is a priority for effective citizen participation within such institutions.

In order that the objective proposed in the research work could be accomplished, it was necessary to investigate not only if the ICTs exist in government institutions, but also to formulate models so that they were present. It was necessary, above all, to know how relationships are maintained in Brazilian Health Councils, checking if the citizen is an active actor in the decision making process at a local level, if he has access to information, if he has access to the ICTs, and finally, if ICTs may contribute to the communication among the actors, government and society in a more balanced way.

The necessity of a global vision in regards to the network formed by the Brazilian Health Councils, in relation to its performance in the process of formulating policies and the inter-relationship among the actors, was essential for enabling it to reach proposals or considerations that could contribute to improving communication, and therefore accessing information seeking improvements in Brazilian public policies, through ICTs.

In order that the proposed goals could be accomplished, four specific objectives were adopted. They were: i) mapping the organizational structure in the existing network of Brazilian Health Councils, as a way of checking how such entities currently operate; ii) identifying and analyzing the political network formed around the councils, trying to identify the role of the citizen during the process of constructing sectorial public policies and the flows of communication that compose it; iii) verifying to what extent ICTs are used in the constructing process of public policies inherent in this network, while also seeking to identify the possibilities of using it for expanding citizen participation, and finally, iv) propose a conceptual model of citizen participation based on ICTs that enables broadening participation spaces in the context of councils.

1- METHODOLOGY PROCEDURES

The methodology used in this research started with a cross analysis of citizen participation in the decision making process for defining public policies and took into account two main points: the first one is concerning a methodology that could comprehend and manage the complexity and diversity of the actors involved in the process of formulating Brazilian public healthcare policies. The second point consisted of analyzing and verifying the insertion of Information and Communication Technologies in the councils and if this factor could truly help in the relationships among the variety of actors.

In this way, the study tried to divide, organize and understand the conditions necessary for participation, such as: the opening up of possible communication channels; information access and transparency; development and continuing education. In the case of health councils, the barriers encountered are, in general, related to the imbalance of power among the actors who participate in this process in terms of access to information and even in the responsibilities defined for each actor involved.

In order to arrive at the desired results during the research, the systemic critical theory was used, different from traditional methods of analytical thought. The tenor of systemic thought takes into account questions that involve several factors or variables from organized standards of interaction. This means to say theoretical conceptions and principles that try to explain entities, phenomena and situations, whose understanding cannot be comprehended in its entirety by analytical thought.

Besides, the definition of systemic thought is seen as understanding a phenomenon within a context, when the totality of the interactions involved is established, as opposed to searching for simple causal relationships between isolated parts (Capra apud Kasper, 2000).

From the methodological definition for the systemic point of view, a specific theory was opted for that was able to adapt itself to the objectives proposed in this work: Critical Systems Heuristics combined with the method of Social Network Analysis.

2- SYSTEM ANALYSIS: CRITICAL SYSTEMS HEURISTICS

Critical systems approaches incorporate critical theory fundamentals that seek to understand situations involving inequalities, distinct interests, conflicts and contradictions. Such a fact is due to the search for expanding knowledge and intervention in social organizations. According to Michael C. Jackson, the theoretical elements present in the critical perspective are made up of some basic characteristics. In general, this perspective, as applied in organizational contexts, requires considering technical interactions, like the nature of interactions between people and the search for diverse visions, interests and objectives that are immersed in relationships of power, inequalities and conflicts. They provide us with the composition of the complexity of an organization (Jackson apud Kasper, 2000).

To carry out an analysis of the complex system where Brazilian healthcare councils are inserted, Critical Systems Theory was utilized, specifically Critical Systems Heuristics developed by Ulrich (1987). This system of analysis allows us to
comprehend relationships among actors involved in the social system studied, while opening up frontiers in order to seek out an understanding of existing relationships.

For Ulrich, systems sciences provide a fundamental concept for understanding the meaning of the normative content of practical knowledge, as in the case of a proposition for a social system plan or project. For the author, certain hypotheses may be made as “boundary judgments”; present in any social system plan or project. In such delimitations, there should be designers’s presuppositions about what belongs to the part of the real world being studied and improving and what is extern within reach of this effort (Ulrich, 2000).

Critical Systems Heuristics starts with the distinction between those that are involved in a planning decision (participants, those responsible for decisions, planners, and managers) and those affected by the decisions but who are not involved in the planning (witnesses). The line between the two terms “those involved” and “those affected” and their inter-relations is essential for understanding the system that one intends to analyze as well as its communication conditions and the forces within the system. It must be noted that the term “those affected” is understood here in a strict sense. They are actors that live in the social reality in question and therefore, experience at least some of the consequences resulting from the planning put into effect by those involved.

Besides understanding the situation of those involved and affected by the problem, there are key points for systematically executing boundary judgments. It is basically to “identify”, “discuss”, and “challenge and evaluate” a determinant social reality. According to the author, i) identify the source of selectivity (what is a part of the system); ii) examine the boundary judgments and their practical and ethical implications (system determiner); iii) find alternatives for the reference system (in light of new options); iv) seek mutual understanding among the involved in relation to reference systems and finally, v) question the claims by unrestricted usage of boundary critiques.

There are four aspects that were evaluated in the study, each one involved in the analysis of three categories concerning the actors taking part in the process.

- First aspect: motivation: Where does a sense of purposefulness and value come from? What purposes are being served, whose purposes are these?
- Second aspect: power: Who controls the means and the resources? Who controls the situation and what is necessary for success?
- Third aspect: knowledge: Which experiences and knowledge support the hypothesis? What is the source of expertise which contributed the necessary information?
- Fourth aspect: legitimacy: What provides legitimacy?

The first category represents the social actors related to the situation, being involved or not. They may be effectively or potentially affected. The second category presents the main interests associated with the social actors in question. Finally, the third category illustrates the main difficulties encountered.

Following the main stages proposed by Critical Systems Heuristics, the analysis was divided into four principal stages, seeking specific methods that were suitable to each one. The first three stages are made up of an analysis of Brazil’s Health Council situation. Firstly (stages 1, 2, and 3), sought to understand the relationships maintained among the actors and the flow of communication involved in the decision making process in a way that comprehends if in fact what is guaranteed to the citizen by law, his participation in the decision making process for public policies and social control, is effective. Secondly, there is an investigation into ICTs and if they are present in institutions in a way that facilitates access to information and if this occurrence may contribute to establishing communication between the government and society that takes place in a more balanced manner. The last stage of the study offers considerations concerning the problems found and possible courses to be taken.

2.1 - 1st Stage: Identifying the sources of selectivity: the parts that make up the system

The first stage sought to divide and organize the framework of what composes the body of analysis in this study. To do this, several documents were classified which were essential for understanding the formation of Brazilian Health Councils, their attributes and the network of inter-relations formed among a variety of actors. This study allowed for identifying the main actors that make up the system, the inter-relations among them and in this way to determine what composes this framework of analysis. This operation for classifying the component elements was defined according to criteria previously established, for example pertinence and relevance for understanding the theme dealt with here and its direct relationship with Brazilian Health Council participation. This also made it possible to achieve a level of systemization necessary for formulating the
stages that ensue. It may be said that a study has been carried out mapping the policy network formed in relation to healthcare policies in Brazil. From such mapping and from identification of the actors, it was possible to construct the next stage.

The categorization undertaken in this study took into account the process of analyzing actors identified during the production of an inventory done related to the process of formulating Brazilian healthcare policies starting from the period in which Brazil was democratized. The inventory brought forth actors responsible for acting directing in this process, agents involved in decision making and those that may be found on the other side of the table, those that should benefit from such decisions. 11 actors in this classification were listed: the Ministry of Health, state Departments of Health, municipal Departments of Health, National Department of Health Council (Conass), National Council of Municipal Departments of Health (Conasems), Tripartite Intermanagerial Commission (CIT), Bipartite Intermanagerial Commission (CIB), National Health Councils (CNS), State Health Councils, Municipal Health Councils and Regional Management Collegial (CGR).

2.2 - 2nd Stage: Determination of the system: examine boundary judgments and their practical and ethical implications

After identifying the actors involved and affected by the system, a mapping of the existing juridical institutions was made. The utilization of a relationship map was chosen for constructing possible relationships between the participating actors. The map has the purpose of describing relationships among the actors in the process. Besides this, it provided a view of the entrances and exits where the “functions and roles” of each actor flow, allowing us to find the “blank spaces”, or in the case of this study, the errors in the process of communication among the actors. Or even more, the lack of clear responsibilities in the sense of participating in constructing Brazilian policies.

Selznick 1972 apud Cury 2000 believes that the mere creation of a formal structure does not determine the creation and the survival of an organization. It is indispensable that an organization has originated through the needs of the collective. Just as with people, organization must have their own character that distinguishes them from the rest. This means that they develop their own identity. This character develops in the same way in which individual character evolves, the greater the number of personal or group interactions, the more accentuated is the organization’s character.

Relationship mapping allows us to find inexistent, unnecessary, misdirected and confusing entrances and exits. Developing relationships permits the elimination of blank spaces or the mistakes, especially those that are obstacles for achieving the strategy of the organization. From a relationship map, there is the opportunity for comprehending not only the hierarchical structure, but also for verifying the horizontal and/or vertical relationships of power contained in the structure. The choice for employing a relationship map was made to facilitate the visualization of the relationships.

The construction of a relationship map was done based on healthcare planning in Brazil. Given the complexity of organizing a structure that covers so many juridical bodies and actors at very distinct moments of action, the set up was divided into three parts. The first of them takes into account formulating the guidelines for healthcare policies where there are conferences for discussing healthcare policies for the national plan, until the moment in which this information gets to the Ministry of Health. Note that these guidelines, due to the high number and variety of proposals, in large part are not entirely utilized by the Ministry of Health. Besides this, it is the role of the Ministry of Health to formulate a national agenda that orients all of the state and municipal juridical bodies in creating their healthcare plans. Therefore, we have here very strong evidence of a hierarchical policy network.

Based on the healthcare agenda, the second part of the mapping presents how strategic planning in relation to healthcare policies does and the flows demonstrate the process that has taken place in the strategic plan. The third part shows the tactical-operational planning put into effect from the national healthcare plans and represents the practice of healthcare in action.

Additionally, actors who participated in the system were superimposed onto the mapping process and also which quadrants they are included in taking into account their functions and the communication flow and connection traced between them. The flow here is concerned with the entrances and exits of information related to any process that is found in the context of constructing healthcare policy in Brazil. It may be observed already at the beginning of the analysis that the Tripartite Intermanagerial Commission (CIT) and the Bipartite Intermanagerial Commission (CIB) juridical bodies end up breaking or even interrupting the flows of communication where there is citizen participation. This factor has led us to believe in a network made up of actors who act in a highly hierarchical manner as well as being centralized on the function of managers, individuals who dominate the decision making processes when constructing and formulating public healthcare policies in Brazil.
After designing the relationship map, it was necessary to analyze the questions put forth by Ulrich (2002), concerning those actors “involved” and those “affected” and the relationship and flows of communication inherent in the participatory process of decision making. For this stage, Social Network Analysis (SNA) was used. Opting for this type of analysis was based on the possibility of being able to clearly present graphically how the interaction of actors and their inter-relationships occur. This brought with it the possibility of visualizing the gaps and the errors so that afterward we would be able to look for potential solutions to the problem.

There are several possibilities for tangibly demonstrating the processes of interaction. But for this research, we understand it to be a viable alternative, given that information may be seen as the main element in social relationships and its flow may be observed from a network structure standpoint. Such an analysis is based on the fundamentals of a correlation between sociological and mathematic concepts to create graphs that enable data analysis. Several measures were generated such as structure (cohesion, density, centrality, clusters and others) utilized for confirming the suppositions of this study.

After executing an analysis of the network formed by Brazilian councils of health and the governmental juridical institutions that surround them, the gaps found were clear in relation to the councils and their peers regarding communication and the functions exercised within the delineated system. In this way, the possibility for analysis surfaced concerning the use and insertion of Information and Communication Technologies in this context.

As a way of verifying what has been described and through analysis of the relationship map, chart 1 was prepared pointing out all of the interactions that are realized from the flows of communication and the connections present in the system delineated by the relationship map and therefore the network relationships.

<table>
<thead>
<tr>
<th>ACTOR</th>
<th>ACRONYM</th>
<th>INTERACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Health</td>
<td>MS</td>
<td>COSS, CIT, CNS, COMS, CIB, SES</td>
</tr>
<tr>
<td>State Department of Health</td>
<td>SES</td>
<td>MS, COSS, CES, CIB, CGR, CIT</td>
</tr>
<tr>
<td>Municipal Department of Health</td>
<td>SMS</td>
<td>CGR, CIB, CMS, CIT, COMS</td>
</tr>
<tr>
<td>National Health Council</td>
<td>CNS</td>
<td>MS, COSS, COMS, CES, CMS, CIT</td>
</tr>
<tr>
<td>State Health Council</td>
<td>CES</td>
<td>CNS, CMS, CIB, CIT, SES, COSS</td>
</tr>
<tr>
<td>Municipal Health Council</td>
<td>CMS</td>
<td>CNS, CES, SMS, COMS</td>
</tr>
<tr>
<td>CIT</td>
<td>CIT</td>
<td>MS, SES, SMS, CNS, CIB, CGR, COSS, COMS, CES</td>
</tr>
<tr>
<td>CIB</td>
<td>CIB</td>
<td>CES, SES, MS, CIT, SMS</td>
</tr>
<tr>
<td>CGR</td>
<td>CGR</td>
<td>SES, SMS, CIT, CIB</td>
</tr>
<tr>
<td>Conass</td>
<td>COSS</td>
<td>CNS, MS, SES, CIT, COMS, CES</td>
</tr>
</tbody>
</table>
We can affirm an intrinsic relationship among the parts. Moreover, to facilitate this view and to understand each actor's participation, it was necessary to analyze some specific questions such as network density. Density illustrates a high or low degree of connectivity not only in relationships but also in an actor's relationships with the network.

2.2.1 - Network density

The degree of density is calculated by dividing the number of existing relationships among the possible relationships and multiplying this by 100 \(D = \frac{RE}{RP} \times 100\). The total of possible relationships is calculated from the number of nodes by the total number of nodes minus 1. For this network, the number of possible relationships is \(RP = NTN \times (NTN - 1)\). Thus, in this network there are a total of 11 nodes and 64 relationships.

Possible relationships (PR) = 11 x (11 -1) = 110
Density calculation (D) = \(\frac{64}{110} \times 100 = 58.2\%\)

The maximum value that a network can reach is a connectivity of 100%, meaning that there are relationships among all of the parts. It is possible to analyze that the connectivity of this network is 58.2% and it may be said that it has an average tendency and may tend towards greater connectivity depending on how the relationships are designed. The connectivity of the actors is measured by the degree to which they relate with one another within this network. From this we can confirm that in a simple matrix, the Municipal Health Councils have a low number of relationships with the other actors.

2.2.2 - Network centrality

Another important measure for networks is their degree of centrality. Here we can verify the entrance and exit degree of each actor depending on the direction of the flows that are formed. Exit degrees are determined by the sum of interactions that the actors have with other nodes, for example the exit degree of the Municipal Health Council interacts with 5 nodes so therefore its exit degree is 5. The entrance degrees are the sum of interactions that the nodes maintain with an actor, thus if 5 nodes interact with the Municipal Health Council, then its entrance degree is 5.

We verified that in this network there is the Tripartite Intermanagerial Commission (basically made up of managers) with the largest degree of centrality having a value equal to “9”. This means that the centrality of this actor is 90% and thus it maintains the greatest number of interactions, signifying that it has the largest network connection. On the other end, the Municipal Councils of Health have the lowest degree of relationships with the other actors, having a value equal to “4” with a percentage value of 40% insertion in the network. This value is well below the network density which signifies its lack of connections. It was also confirmed that some actors have a balanced participation given the mean established by the total number of interaction which is equal to 6.

We can then present a general graph of the network with another visual, highlighting who the main actor is in this process. The graph below shows a network where nodes were constructed in accordance with the interactions in effect and also according to their centrality. The network created in this analysis is centralized in the Tripartite Intermanagerial Commission and the component with the least number of relationships, almost imperceptible, is the Municipal Health Councils.

2.2.3 - Degree of betweenness

This measure shows the control of a network’s internal communication. It demonstrates the betweenness among the parts or the capacity of one node to intermediate communication among its peers. In this network, a study was made of this measure and it was verified that the greatest degree of betweenness is 14.4%, a normative result, belonging to the Bipartite Intermanagerial Commission. And, one of the lowest degrees of betweenness belongs to the Municipal Health Council with 2% of betweenness, reflecting one more time its small or almost zero capacity for network internal communication. Since the discrepancy is very large, the average degree of betweenness that the network has is very low in relation to the main actor. This relationship demonstrates who the holder of diverse communicational processes is.
The network composed of 11 actors reveals a tendency for little participation by citizens given that their place for acting is in the Municipal Health Council and it is this actor that demonstrates the lowest degrees of interaction and proximity with the other actors. The result of the data in reference to this network shows a network that is highly centralized and basically composed of managers.

In order to have a clearer and more objective view of citizen participation in the context of the Councils and thus their power in formulating healthcare policies, an outline of a network made up of actors that belong to the process of designing healthcare plans in the municipality was made. This was done in order that there be a visual of this process and showing which place the citizen occupies and how he participates.

### 2.2.4 - Communication flows and citizen participation

To show citizen participation in the context of municipal health councils, it was necessary to choose one delineated moment in the system in order that citizen participation be visible. The moment of formulating the planning for local healthcare was chosen where this actor participates (or should participate) in the decision making stages in relation to local policies.

According to official documents, Healthcare Planning must be formulated with the participation of the following actors: the manager; a technical team designated by the manager; a Municipal Health Council; and the local community. The plan must be formalized by a decree or an instrument of management, or by presenting directives to the council so that it approves and informs the manager by way of a resolution. The planning is carried out by a team designated by the manager. A team may be convoked only for this purpose. To formulate the plan, the team should consult documents generated during the national and state policy planning stages as well as any other documents that may be necessary. Besides the documents, the team has discussions with technical areas in order to eliminate any mistakes. At this moment, as stated in the document, it is “recommended” that the team participate in meetings with the local community, social representatives and with the Municipal Health Council. After the planning is formulated, it is sent to the Council for approval and the document is returned to the manager for the purpose of publication.

To develop graphs in relation to this network, two possible tables were made of existing relationships contained in the sequence of actions for formulating a healthcare plan: Situation 1 and Situation 2. The situations represent the relationship possibilities among the actors. The first situation demonstrates how decision making in accordance with the actors takes place. Such a situation is found in the majority of Brazilian municipalities. The second situation shows the relationships, but includes a new actor, the citizen, which represents a dialogue with society.

### A - Situation 1

<table>
<thead>
<tr>
<th>ACTORS</th>
<th>ACRONYM</th>
<th>RELATIONSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>GE</td>
<td>EP, CS</td>
</tr>
<tr>
<td>Planning team</td>
<td>EP</td>
<td>GE, AT</td>
</tr>
<tr>
<td>Technical areas</td>
<td>AT</td>
<td>EP</td>
</tr>
<tr>
<td>Council of Health</td>
<td>CS</td>
<td>GE</td>
</tr>
<tr>
<td>Citizen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chart 2: Outline of actors participating in situation 1
The chart above presents all of the actors that may possibly participate in the planning of a healthcare plan in a municipal context. The first situation establishes the citizen as an actor, but one who is not influencing the process. The network formed displays a density degree of 30% and is calculated in the following way:

Possible relationships (PR) = 5 x (5 -1) = 20

Density calculation (D) = (6/20) x 100 = 30%.

It may be asserted that it is a very low degree of interaction which displays a low flow of communication, practically centered on only a few actors. It may be said that it is a bidirectional network since for each flow defined, it is necessary to have a return. Observe that the structure is practically linear for decision making.

In verifying the centrality of the network, it may be understood that it takes place in a manner that is equal between the managers and the planning team, where the two actors determine the centrality of this network, as can be observed from the values presented in table 1.

<table>
<thead>
<tr>
<th></th>
<th>Degree</th>
<th>NrmDegree</th>
<th>Share</th>
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<tbody>
<tr>
<td>1</td>
<td>gestor</td>
<td>2.000</td>
<td>50.000</td>
</tr>
<tr>
<td>2</td>
<td>equipe de planejamento</td>
<td>2.000</td>
<td>50.000</td>
</tr>
<tr>
<td>3</td>
<td>áreas técnicas</td>
<td>1.000</td>
<td>25.000</td>
</tr>
<tr>
<td>4</td>
<td>conselho de saúde</td>
<td>1.000</td>
<td>25.000</td>
</tr>
<tr>
<td>5</td>
<td>cidadão</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Table 1: Results from calculating network centrality**

Despite having two distinct actors centralized in the network (manager and planning team), they can be seen as a single actor given that who determines the direction of the planning is the manager. The councils in this case fulfill the role of an advisory body seeing that there is no relationship established with the planning team which is who carries out the municipal’s strategic planning.

Such conditions lead to an understanding that the municipal council is just an advisory body and that it does not in fact fulfill the place for deliberating on Brazilian healthcare policies.

**B - Situation 2**
Situation 2 is a bit different from the previous one, but it does show differences in the participatory condition. The structure is a little more distinct than the one before and there is greater interaction among the decision making parts. As previously shown, the degree of density is calculated from the following formula $[D=\frac{RE}{RP}\times100]$.

Possible relationships (PR) = $5 \times (5 -1) = 20$

Density calculation (D) = $(10/20) \times 100 = 50\%$

One can see that the connectivity of this network is 50%, a result that is more satisfactory than the last, but not very satisfactory in relation to what could be. Here, it can be seen that the difference is not only in the structure, but especially with one actor, the planning team. This actor dominates the relationships among all parts of the network, between the council, the citizens and technical areas. Therefore, it is the manager, practically as the sole actor, who dominates the formulation of strategies for healthcare in the municipality. What is surprising in this network is that the citizen is linked to the planning team and not directly to the council considering that it is the council that represents the citizen when making decisions.
This does not mean that the citizen cannot give his opinion directly, on the contrary, but this situation does reveal to us a loss of legitimacy for the councils. It would no longer be worth representing the part of the users and their right to deliberation. The councils would act only as bureaucracies executing legal orders, which are approving healthcare plans. Moreover, this reinforces the image that the council is really just another tool for managers to act according to their own wills. It is typical of the councils to serve only the will of the manager at that moment when it is necessary for this body to pass on resources or accreditation along with the Ministry of Health. In the end, it is the agenda of the government that dictates the rules in whatever the situation may be, thus disrupting society in what regards social control.

The table below shows that the degree of centrality increases when we observe situation 2. Contrary to what one would expect, given the discourse that the network would be better distributed, one can see that the reality is quite different.

<table>
<thead>
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<th></th>
<th>Degree</th>
<th>NrmDegree</th>
<th>Share</th>
</tr>
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<tbody>
<tr>
<td>equipe de planejamento</td>
<td>4.000</td>
<td>100.000</td>
<td>0.400</td>
</tr>
<tr>
<td>gestor</td>
<td>2.000</td>
<td>50.000</td>
<td>0.200</td>
</tr>
<tr>
<td>conselho de saúde</td>
<td>2.000</td>
<td>50.000</td>
<td>0.200</td>
</tr>
<tr>
<td>áreas técnicas</td>
<td>1.000</td>
<td>25.000</td>
<td>0.100</td>
</tr>
<tr>
<td>cidadãos</td>
<td>1.000</td>
<td>25.000</td>
<td>0.100</td>
</tr>
</tbody>
</table>

**Table 2: Degree of centrality of the network formed by situation 2**

After seeing the charts, it is impossible to resist thinking of potential solutions aimed at the possible approximation of citizen to decision making. The main objective of this study was to verify if technology can catalyze participation. But rather than giving any reply to that effect, it is necessary to reflect on in what conditions this could be a fact. In this way, we open the last part of the analysis in search of structural solutions that provide conditions, having ICTs supporting the expansion of communication in order that there may be better citizen participatory conditions and in this way enlarge the participatory space in the process of formulating public healthcare policies.

2.3 - 3rd Stage: Find alternatives to the system of reference: seek understanding of processes determining the problem-situation, contemplating new options to be considered

Through the above analysis, it was identified that the network formed by all of the actors in the system has an average density and that the connections are mainly concentrated in one specific group of actors, the managers. Interaction is low and rare principally in the case of the municipal councils of health. Such a situation describes how established relationships organize themselves around one central actor who dominates a greater part of the interaction flows among the actors. The networks designed in the study suggest that the context of the system is marked by elements of power and by patterns that evidently separate what is central and what is on the margin of this system.

It can be stated that this is not a cohesive network, since it excludes the clients almost entirely from the participatory process. Contrary to this, the control and deliberative bodies are completely dominated by restricted groups where the user of the
National Public Health System, council participant or not, citizen, not having space to demand what is necessary to them. It is understood that it is in the context of the municipal councils of health where there is the greatest gap and also a great opportunity for modifying this reality.

The problems to be overcome to arrive at this reality are of various types, starting with the operating structure that should be changed. Fundamentally, in order that there be a greater density, it is necessary for the actors to inter-relate more equally. To do this, a hypothetical redesigning is proposed for part of the system. This is in effort to reformulate some positions in the network, in the sense of expanding council and also citizen action in decision making. It is known that to do this it is necessary to reform legislation, but it is possible to think of solutions in the search for empowering and inserting the citizen in this process. And also to attack some factors that harm social control such as the political distribution of management posts.

The structural change must be made with the objective of making relationships horizontal and expanding participatory spaces. In the first place is to alter the way in which the Municipal Health Council operates, going from a presidentialist regime to another form of organization.

A model that is not dominated by one main actor who centralizes information leads to a network that tends to be more open by nature and thus apt to receive and transfer information to all actors that participate in it. Theoretically, this would preclude (very probably) interactions of questionable character and would open up space for expanding social control. In data related to the communication contacts of municipal councils, such as telephone, address and e-mail contact provided by the National Health Council, in the majority of cases, we perceived that they are part of the municipal department of health, meaning that contact is made directly with the managers. The same situation does not happen with the state councils of health which rely on more financial resources and are able to maintain a better organized structure.

Besides giving relationships between the actors a new form, we would include the citizen, be him a healthcare professional or citizen user of SUS, as a fundamental actor for participating in the planning team which develops healthcare plans. In this manner, they accompany the process of creating local policies and moreover have sufficient knowledge regarding the plans annually outlined so that they may have greater proximity to the evaluations and results obtained from implementing healthcare actions in the municipality. And finally, inserting the citizen, who is not part of the collegial body, in policy deliberation spaces would be guaranteed if there were channels open directly with their representatives given that it is through the councils that the citizen has a voice.

In the search for bigger spaces, it is necessary to resume contact with communities, occupy space in the media and to involve managers. ICTs would contribute effectively to this process since they would make possible the opening up of channels and access to information, not only among the collegial body, but also among citizens in a manner that provides for a more balanced dialogue with conditions to access knowledge about local problems. Moreover, since it must be mentioned, they would make possible insertion of the citizen in order that he demand, accompany and have control over his real needs. Furthermore, they resolve a significant problem asserted by defenders of representative democracy regarding the impossibility of a direct inquiry with citizens given the immensity of the country and the increase in population. Information and communication technology resources, mainly the internet, enable distances to be reduced in terms of communication between citizens and the government.

In the model proposed here, use of ICTs is essential, be it through more traditional channels like the telephone and e-mail, but also considering opening new channels via internet where information may be exchanged and where there is the possibility for actors to participate. Such channels could provide communicational support to the structure formed.

2.4 - 4th Stage: Discussion of the results found: questioning demands through the unlimited use of boundary judgments

An example of this hypothetical situation is organized in a chart that includes actors and their relationships. We took into account some fundamental factors such as the fact that representation would continue with the same equality guaranteed by law when creating the councils. The most important modification to be made is in respect to inclusion of citizens and healthcare professionals, these two actors will be considered as new actors in the process of developing policies. User representatives are kept, as are healthcare professionals and management representatives. The team set up to execute the planning of local healthcare plans is also maintained as well as the manager given his role as being responsible for putting the plan into effect. Given how it is put, the changes do not appear and at first sight this new structure may cause significant changes when we analyze the original. Changes may be seen in the connections and flows between the actors.
The operation is established in the following manner: the collegial body has legal jurisdiction and is open for debate amongst its parts. It is in this space with multiple representatives where citizens (not represented) and healthcare professionals can make demands, give opinions and accompany the planning as well as the fulfilling of local healthcare plans. To do this, there must be channels of communication such as telephone, e-mail contact and tools available to facilitate the population’s access via a space on internet, where the collegial body may take material strength. But why let the citizen communicate and express themselves through their representatives and not enjoy a direct relationship between him and government?

There are two issues to clarify. The first understands that direct contact with the manager does not guarantee that demands are met. The second refers to the modification made to the previous model. For the current model there is the condition that there is representation from all actors directly in the planning team of local policies. The participatory space formulated via a virtual space will include interaction among all of the actors involved: citizen; healthcare professionals; citizen representatives; managers; and workers. The format for interaction within this virtual space could be created with the opening of forums, public queries, and with making available information accessible to all. This would guarantee that what was demanded by the population be brought to the debate by representatives at the time of putting into effect the budget and giving priority to resources to be applied.

Having done that, it is necessary to verify if this hypothetical model of organization based on ICTs contributed to opening up participatory spaces. In the same way that other networks were analyzed, we also set up for this case a relationship matrix indicating interactions between citizen and workers and of all those involved.

<table>
<thead>
<tr>
<th>ACTORS</th>
<th>ACRONYM</th>
<th>INTERACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>GE</td>
<td>EP, RG</td>
</tr>
<tr>
<td>Planning team</td>
<td>EP</td>
<td>GE, RG, RU, RT</td>
</tr>
<tr>
<td>Management representatives</td>
<td>RG</td>
<td>GE, EP, RU, RT, CD, TS</td>
</tr>
<tr>
<td>User representatives</td>
<td>RU</td>
<td>EP, RT, RG, CD, TS</td>
</tr>
<tr>
<td>Worker representatives</td>
<td>RT</td>
<td>EP, RU, RG, CD, TS</td>
</tr>
<tr>
<td>Citizens</td>
<td>CD</td>
<td>RG, RU, RT, CD</td>
</tr>
<tr>
<td>Healthcare professionals</td>
<td>TS</td>
<td>RG, RU, RT, CD</td>
</tr>
</tbody>
</table>

**Chart 4: Actors participating in the new model**

The density was calculated for checking to see if there the relationships among the actors increased or not. For this network, there are 42 possible relationships for 30 existing relationships.

Possible relationships (PR) = 7 x (7 -1) = 42

Density calculation (D) = (30/42) x 100 = 71.42%

The results in relation to density reveal a considerable increase in interactions among all of the actors in the process, reaching a value of 71.42%. The outcome is positive if we think about the fact that the maximum possible relationships for a network are 100%. It is still however necessary to confirm the degree of centrality and the distances found in this network as a way to verify if there was a change in behavior.

The degree of centrality was calculated to see if the relationships among the actors remained equal. From the table below, it was verified that the centrality in this network is balanced considering that all of the actors have a degree of centrality above...
the mean whose value is “4,266”. The only actor who has a degree of centrality below the mean is the manager, but in this case, his balance is maintained by the two bodies that he coordinates which have higher degrees, the planning team and management representatives. This relationship may be understood to be positive since part of a manager’s responsibility is to put health plans into action. Previously, during the process of analysis it could be seen that the manager completely dominated the process and this was an impediment to opening up participation. In this case, the balance provides a more equal dialogue, having the conditions for everyone to be heard.

Table 3: Results from calculating the new network’s degrees of centrality

Figure 2 presents the graph generated from calculating centrality and reveals that the network is much more articulate than those previously shown and has a balanced degree of participation.

The presence of centrality in the “Management representatives” actor may be seen here since it has direct links to all of those involved. It is important to note that even thought the citizen and the healthcare professional do not have direct contact with
the manager; they have the possibility of being heard by the center of this network, which is the representative of this actor. Finally, it may be affirmed that in this specific case, the ICTs allied with a new form of organization can contribute to expanding participatory spaces.

Another measure necessary for confirming the conditions of this network is the degree of betweenness among the actors. This will show: control of internal communication of the network; the betweenness among the parts; or the capacity of one knot/node to mediate communication amongst its peers. For this network, the largest degree of betweenness was verified in a normalized result of 3.667% for management representatives, the actor with links to all parts.

The lesser degrees of betweenness are found in citizens and workers. Each one has 0% control in communication. In this case, control is not due to the fact that there is no participation, but is due to who promotes and coordinates the actions taken in this scenario. The holder of the communication process among the actors is in the hands of the manager. It is he who should promote actions for promoting coordination among the actors involved, as a way of maintaining ties and bidirectionality in the process of formulating local policies.

It is important to emphasize that these are hypothetical results generated by the study in order to understand the utilization of other possible models. We are concerned with presenting a view from which the citizen does not lose rights gained with the creation of the 1988 Constitution. It is acknowledged that the design of this model has a small sample compared with a complete system where there are many other forces that make up the flows and links in this complex network. But it is believed that even so, the study may show that there are ways to broaden participation and it should be considered at this time how to incorporate such changes. This is due to the fact that the intensive incorporation of ICTs, responsible for maintaining conditions for the network to work, promotes access to a much greater number of participants.

Finally, it is considered that policies undertaken by the Brazilian Ministry of Communications are necessary in order to provide all Brazilian municipalities with infrastructure and access to a wideband internet connection. This is essential so that there is development in the sense of expanding citizen participatory spaces. It is still necessary to implement actions as a way to construct integrated systems of information that facilitate the search for complete information which assists in decision making by all actors. Lastly, it is highlighted here that it is not enough that information be published, it is necessary that it also be accessible in order to provide an understanding of information by any actor who is part of this process, independent of having technical knowledge or not.

CONCLUSION

Thus it is clear, principally in Brazil, that decentralization of the State falls back upon an old problem; policies are still horizontal and work from the top down. It is the Federal Government and the Ministry of Health share all decision-making power and even with the decentralization municipalities remain without power over their own management. Participation cannot be broadened if the local power is not able to discuss its problems. Observe that participation should begin at the local level, where the citizen is inserted, and from here go on to a larger sphere and then effectively fulfill its participatory and effective role in social control.

In this research, we understand participation to be an indispensible component to constructing citizenship. For this, we cast an eye at the citizen as one of the agents that acts in the decision making process, responsible for constructing and controlling decisions. It is an action in favor of the collective interest or even of national social groups which is the very legitimacy of acting on behalf of the collective.

Information and Communication Technologies occupy, without a doubt, a central place when the subject is citizen participation in the decision making process among Brazilian councils of health. The opening up of possible channels for communication, access to information and its transparency, in addition to development and continuing education are all factors that are crucial to have conditions for participation in such instances. These factors influence, not only decision making, but also the entire process of democratic and participatory creation in society. The use of ICTs refers to the way in which technological apparatus may be mobilized to support development goals, particularly those related to social, political and economic development.

According to the analyses developed throughout this study, it can be verified that mapping an organizational structure for an existing network of Brazilian health councils reveals a high degree of concentration of power in the hands of managers, opening little or almost no space for citizen insertion in the decision making process of formulating public policies. In the context of the network formed for developing public healthcare policies, it was verified that the citizen has his activities guaranteed in the municipal councils of health. If on one hand he is guaranteed the right to participate, on the other the body
in which he participates in shows a lower degree in relation to connectivity, communication and betweenness within this network.

In respect to citizen participation within the network formed in municipalities among councils, managers, technical planning teams it was verified one more time that the citizen has almost no power in the process of formulating policies. We verified here that the structure presented in the complete network is repeated and that it is the managers who dominate local relationships.

Despite the fact that there are councils, we saw that they are extremely bureaucratic furthermore what is seen is that the council is really just a tool for managers to act according to their own will. In the end, it is the government’s agenda that dictates the rules in any given situation, disrupting society in relation to social control.

With the aim of improving existing communication flows and the opening up of citizen participation spaces a conceptual model was developed based on ICTs that enables the broadening of participatory spaces in the context of councils. The model has the following characteristics: to be a virtual participatory space, that includes interaction among all actors, guaranteeing a larger opening for the demands of the population. Despite being set up as a hypothetical model, we are able to verify through social network analysis that the model displayed a considerable increase in the interaction among actors in the process, reaching a value of 71.42% out of a maximum of 100% of possible interactions.

In conclusion, it was also confirmed that the degree of betweenness among the actors, meaning that balance in communication is presented positively in this network. Despite the manager still being the center of the relationships, the increase in the number of actors and their participatory conditions reduced the distance between citizen and government. This was only possible considering Information and Communication Technologies that could promote interactions among the actors.

REFERENCES


The Constitution of the Federative Republic of Brazil of 1988 is the current fundamental and supreme Brazilian law, serving as a measure of validity for all of its normative variants, and is situated at the top of the legal system. It is the seventh constitution to govern Brazil since its Independence.

The Ministry of Health is an organ of executive federal power responsible for the organization and elaboration of plans and public policies geared towards promoting, preventing and assisting Brazilian healthcare.

The State Departments of Health are organs that act together with the national health councils, discussing and deliberating on national, state and municipal healthcare policy. Its activities along with the federal government are also aimed at serving public healthcare in Brazil. They should carry out with the Municipal Department of Health Councils (COSEMS) harmonious activities concerning healthcare policy, being able to support them technically and financially.

The Municipal Departments of Health are organs that act in conjunction with the state health councils, discussing and deliberating on municipal healthcare policy. Its activities alongside the federal government are also aimed at serving public healthcare in Brazil.

The National Department of Health Councils (CONASS) was created on February 3rd, 1982. With its headquarters in Brasilia, FD, the council has the aim of representing the State and Federal District Departments of Health and it is made up of the State and Federal District Departments of Health – which are effective members – and by formal representatives while they are titles holders of the referred to Departments.

Conasems emerged from a social movement on behalf of public healthcare and became legitimate as a political force which assumed the mission of aggregating and representing the group of all municipal departments of health in the country.

The Tripartite Intermanagerial Commission – CIT is a space for articulation between federal, state and municipal managers with the objective of making Brazilian Public Healthcare Policy viable. Its actions are based on negotiation and making agreements on operational aspects of managing a Decentralized System and Participatory Healthcare. The CIT is a juridical institution for expressing the demands of Healthcare managers in the three branches of government and it is organized in a federal context. Its attributions are also intended for agreeing on strategies for implanting and making operational the National Healthcare System, establishing accords related to referrals and operational matters regarding implantation of services, programs, projects and benefits that make up the National Healthcare System. And finally, acting as a forum of agreement on instruments, parameters, mechanisms for implantation and regulation of the National Healthcare System - SUS.

The Bipartite Intermanagerial Commision (CIB) is a forum for negotiation between the state and the municipalities for implanting and making operational the National Healthcare System. Its makeup is based equally on representatives from the State Departments of Health and by nine Municipal Department of Health Councils (Cosems). CIB was created by Decree SES 012/93, of June 12th, 1993, given the provisions in item 2.2.2. of the Ministry of Health Decree 545/93.of May 20th, 1993.

The National Health Council (CNS) was created in 1937 by law no. 378, which instituted an consultative body where members were nominated by the minister of state. The structure as it is formed today, is intended for, among other matters, acting in the formulation of strategies and in controlling the execution of the National Healthcare Policy in the Federal Government sphere. This includes financial and economic aspects; establishing guidelines to be observed when developing health plans; due to epidemiological characteristics and of the organization of services, elaborating schedules for transferring financial resources to the States, the Federal District and to Municipalities linked to the National Healthcare System; and in proposing criteria for defining assistance standards and parameters.

The Regional Management Collegial (CGR) are essential spaces for negotiation, making agreements and for co-management solidarity in which all municipal health managers of those municipalities that are integrated into the Healthcare Region participate and by representatives of the State Manager, guaranteeing and bettering the application of SUS principles.

A graph is a figure that represents symmetrical social relationships; when relationships are asymmetric, they may be called a digraph or a directed graph in which the directions of the resource flows in relationships are considered (Freeman, 2006).