Complex Social Networks:A New Framework for Exploring Group Doctor-Patient Conflicts

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Abstract The complex social network theory is applied to solve the group doctor-patient conflict in present paper. Results showed that there were different interests in the evolution process of doctor-patient conflict. A complex network structure was developed around core interests and core nodes in the process of doctor-patient conflict. And this network structure can be reinforced under the law of "robustness" and "self organized criticality" .With the probability of the occurrence of events, the model of social behavior will change suddenly and make the events out of control.

Keywords: group conflict;doctor-patient conflict;complex network;forming mechanism

1   Introduction

Before 1950s, people believed in a very ideal doctor-patient relationship, which the doctors were kind and patients were faithful; everything looked perfect[1]. However, as time went on, doctor-patient conflicts started to get worse. For example, according to a 1989 Gallup poll, 67% thought that doctors paid too much attention on making money, and 26% said that they didn't respect doctors[2]. The ideal image of ideal doctor-patient relationship broke up, and the relationship was damaged badly[3] .After 1950s, some systematical theories were gradually forming and developing, such as the patient-role theory [4], medical situation communication pattern theory[5].

In recent years, domestic scholars have keen interest on this hot topic, doctor-patient conflicts. Researching results have emerged in large numbers. They are descriptive, elucidative, but also, static. The causes of doctor-patient conflicts are the most popular study topic(for example,the cognitive differences of doctor-patient conflicts[6]). In addition to cognitive factors, most of the research is based on the perspectives of political science, sociology, laws, economics to analyze the causes of conflicts between doctors and patients[7]. The conflict between medical resources and the public needs is the basis of the doctor-patient conflicts[8]. After the conflict, the fairly intervention of the

authority can help rebuild the doctor-patient relationship, and can also promote harmonious development of medical orders[9]. Certainly, the communication mode between doctors and patients can also affect the relationship between doctors and patients from another aspect, and it is the basic skill of the daily maintenance of the doctor-patient relationship[10].

Given the above, the current domestic analysis about group doctor-patient conflicts is static, and it always tends to focus on factors. Actually,Group doctor-patient conflict is a process of gradually forming, upgrading and bursting out, which is a systematical process of complex interactions. Complex social network theory provides a good theoretical foundation framework to analyze these two issues, and next, the paper will begin the study based on this theoretical perspective.

2   Network of group doctor-patient conflict

Community refers to the subgraph of cohesive nodes. There are many connections between nodes but relatively few connections between subgraphs. To put it simple, a large number of network nodes concentrate inside the community and interact frequently with each other, yet networks do not interact quite often between themselves(As shown in Figure 1)
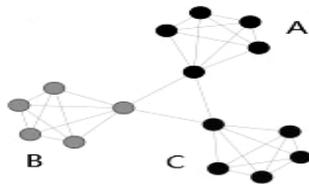

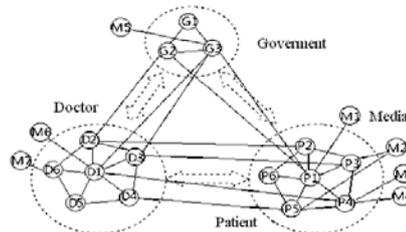**Fig. 1**   **Fig. 2**

Based on this analysis framework, the structural differentiation of group doctor-patient conflict communities is done (Figure 2). Through the analysis of a group doctor-patient conflict caused by a child's death, we can discover that, there were different communities with certain interest demands involved in the process. These communities were, the patient's family members and relatives who had a direct claim of interest (P), the doctor community who had a direct defence of their own interest and vocational interest (D), government community who pursued social stability (G), media community who indirectly sought both commercial and social interest (M). For communities directly involved in the conflict, each one of them (P, D, and G) had a core of interest, and other relevant individuals were tightly connected centered on the mutual interest. Meanwhile, there was a central figure in each community, which was

the central node in the community network. The community with indirect interest did not have a clear central nude. The individuals connected with each other in a loose way. Graph 2 is the community structure of a group doctor-patient conflict that happened in a children's hospital in Nanjing. In the conflict, the patient's family members and relatives wanted to maintain their own interest. The deceased child's parents were the core node, and the whole community was based on the core nude. P1, P2, P3, P4, P5, and P6 were used to indicate the members of the community. The doctor community was constituted by individual doctors and nurses, which were represented by D1, D2, D3, D4, D5, and D6. The government community was symbolized by G1, G2, and G3, which respectively stood for municipal party committee, health authorities, and police. This three-community structure is typical of today's group doctor-patient conflicts in China, and may serve as the base for further studies. What is worth noticing is that, due to the competition of interest and the looseness of connection among the media community, the following will not include detailed analysis of this community.

The differentiation of community structures does not only focus on interest communities, but also on the analysis of the core interest and core nodes of the community. The analysis of core nodes, in essence, is the analysis of influence in a community structure, or in other words, to seek out the most motivative and influential individual in the community. Generally speaking, there is a person at the center of each community. This person is the most influential one in his or her community and is termed core node. The core of the patient community is normally the immediate relatives of the patient (deceased or with aggravated symptoms). Their core interest usually covers the acquisition of financial compensation. The core of the doctor community is the doctor involved in the accident. As the conflict develops, the core node seems to transfer upward, towards the hospital management. The core interest of the doctor community at first is to protect the individual doctor involved in the accident. With the escalation of the situation, however, the core interest extends to the defence of the personnel and resources of the hospital even the vocational dignity of medical practitioners. With the extension of common interest, there is also an extension of the members inside the community, from those directly involved in the conflict to the whole personnel working in the hospital. The core of the government community also bears a feature of upward transfer. More and more government departments are involved in the conflict, and the core node keeps transferring upward. As for the doctor community and the government community, with the upward moving of the core node, their core interest changes gradually, and the motivations for settling group doctor-patient conflicts experience changes as well. The mentality of patching up a quarrel and reconciling the parties concerned begins to appear.The interactions between communities (the directions of connections) also have obvious different characteristics.

3   Network dynamics of the group doctor-patient conflict

On one hand, in a group doctor-patient conflict, the evolution of the community of the patient's family members and relatives clearly takes on robustness. The patient community is the most active community throughout the process. It propels the whole conflict to take place and changes. Once the patient community is formed, the behavior pattern to eliminate group doctor-patient conflict by restricting certain family members' radical behavior via coercive administrative methods (G) is virtually ineffective. The robustness of communities allows for the absence of members, but the absence will not facilitate the decomposition of the community, nor will it facilitate the dysfunction of the community. Even certain members of the patient community are to some extent restrained, the community itself has a kind of impetus that facilitates the new situation of changed internal structure and external environment. It is of great importance for government to realize that coercive restrictive methods have limited effects and thus should be avoided.

On the other hand, self-organized criticality is typical in the patient community's behavior. This dynamic feature means the inevitability of irrational events with small probability. In the normal state, the system will naturally evolve towards the critical state, yet when a operational system mutation happens, the system may reach the supercritical state and may continuously take on the massive avalanche phenomenon[11]. In the doctor-patient conflict, the patient community interacts frequently with the doctor community and the government community. With the increase of numbers of the members of the doctor community and the patient community and the exchange of information, natural evolution takes place. This kind of evolution makes the two communities evolve naturally towards the critical state. Normally, the critical state will remain unchanged, and . There is a certain probability that the community behavior will experience an operational system mutation, and hence come to the avalanche of both parties' rational behavior patterns. As long as there forms a developed community structure between the doctor community and the patient community, it is certain that the behavior pattern in the interaction of the two parties has a certain probability to mutate, and lead to dramatic and unpredictable consequences(such as the one that happened in a children's hospital in Nanjing).

4   Conclusions

Forming process of group doctor-patient conflict is extremely complicated. It is above all the interaction based on community structure. Each community have its own core node and the core benefit, and the forming process of conflict is the game process of different interest groups. It has its own rules, and it cannot be limited or eliminated forcefully. Robustness makes patient associations have the stability and continuity, and some members are missing or have limitations, but this cannot limit the patient's core functions and pursuit of interests; it has a conflict of "probability".

Once the patient group and the doctor group formed together, the two sides behavioral patterns are intrinsically probabilistic to have "avalanche". Simply, the forming process of the doctor-patient conflict is in nature the gradual formation of patient's family or physician group. These groups, once formed, can have continuity and integrity. One-sided and high-pressure control measures of government cannot produce good results, cannot prevent well the brewing and mutation of mass doctor-patient conflicts, and may even stimulate, and promote patient's family group to act out of control to stimulate the appearance of "avalanche". Certainly, the participation of some accidental factors (a radical member) and external forces (medical troubles) will promote patients' family or physician group cannot control their own behaviors. From the process of evolution, if the government wants to prevent mass doctor-patient conflicts, the most important thing lies in preventing the formation of patients' group. This requires the government to be able to provide unimpeded official channels to the families of patients and doctors' interest groups, and through multi-community-participatory approaches to ensure the fairness of canal operation, so as to realize the harmonious coexistence of both doctors and patients and harmonious social relations.

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