







Relationship network at a mobile urgent care service unit: analysis of a work team

Rede de relações em um serviço de atendimento móvel de urgência: análise de uma equipe de trabalho

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ABSTRACT | Introduction: Professionals at the Mobile Urgent Care Service (Serviço de Atendimento Móvel de Urgência – SAMU) face extreme situations which pose high psychological demands. **Objective:** To investigate networks of relationships among employees of SAMU-Ceará, in Northeastern Brazil. **Methods:** Case study of qualitative nature in which we conducted semi-structured interviews with SAMU-Ceará staff. To draw the relationship network, we first interviewed three professionals including physicians and nurses. Based on their narratives, we interviewed two further employees named by the former. We used program Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires (iRaMuTeQ) for textual analysis of the narratives obtained. Structural network characteristics, such as size and density, were analyzed with software UCINET 6.123 and NetDraw 2.38. **Results:** The interviewees had worked at the service for one year at least. The connections identified based on the interviews evidenced interrelationship between networks involving the interviewees. The links found were weak and unarticulated, even though two interviewees worked in the same department. Discourse analysis yielded three classes: 1) teamwork characteristics and peculiar ways to execute work; 2) relational and subjective aspects centered on management; and 3) nature of the service delivered. **Conclusions:** The social networks at SAMU-Ceará represent a set of workers who establish mutual relationships to satisfy the demands and needs of service users in an integrated manner while attempting to respect the knowledge and autonomy of each member. Nevertheless, the networks evidenced conflict which is a cause of mental suffering at work.

Keywords | social networking; health personnel; emergency medical services; stress, psychological; burnout, professional.

RESUMO | Introdução: Os profissionais que trabalham no Serviço de Atendimento Móvel de Urgência (SAMU) lidam com situações extremas, as quais exigem altas demandas psicológicas. **Objetivo:** Investigar as redes de relações entre trabalhadores do SAMU-Ceará, no Nordeste do Brasil. **Método:** Trata-se de um estudo de caso de natureza qualitativa, em que foram feitas entrevistas semiestruturadas com uma equipe do SAMU-Ceará. Primeiramente, para traçar as redes de relacionamento, foram entrevistados três profissionais do serviço, entre médicos e enfermeiros. Com base nessas entrevistas, entrevistaram-se mais dois trabalhadores, que foram citados pelos entrevistados anteriores. Para a análise textual dos discursos obtidos, foi empregado o programa Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires (iRaMuTeQ). As características estruturais da rede, como tamanho e densidade, foram conferidas pelos *softwares* UCINET 6.123 e NetDraw 2.38. **Resultados:** Os entrevistados estavam no serviço havia pelo menos um ano. As conexões configuradas com base nas entrevistas evidenciaram a inter-relação entre as redes dos entrevistados, e observamos a prevalência de vínculos fracos e desarticulados, muito embora dois dos entrevistados trabalhassem no mesmo setor. Na análise dos discursos, obtivemos três classes: 1) características do trabalho em equipe e sua forma peculiar de execução; 2) aspectos relacionais e subjetivos voltados para a administração; 3) natureza dos serviços prestados. **Conclusões:** As redes sociais no SAMU-Ceará expressam um conjunto de colaboradores que se relacionam para responder às demandas dos usuários de maneira integrada, tentando respeitar a autonomia de cada um, contudo as redes revelam conflitos, ocasionando sofrimento psíquico no trabalho.

Palavras-chave | rede social; pessoal de saúde; serviços médicos de emergência; estresse psicológico; esgotamento profissional.

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INTRODUCTION

Work in the Mobile Urgent Care Service (Serviço de Atendimento Móvel de Urgência – SAMU) has special and peculiar characteristics. Professionals have to cope with extreme situations, such as the boundary between life and death, which pose high psychological demands, especially control of stress to achieve rapid and accurate diagnoses. SAMU was established by the Ministry of Health to provide prehospital care within the Unified Health System (Sistema Único de Saúde – SUS). This is to say, a primary care service for acute clinical, trauma or psychiatric cases which occur outside the hospital¹.

SAMU professionals are under precarious working conditions, including fragile employment relationship, work in violent environments and vulnerability. These conditions make them constantly look for support in social relationship networks. Such networks might be relevant for effective performance of work, with impact on the flow and organization of tasks, and might eventually influence the health of the involved professionals². In addition, stressful situations to which SAMU workers are exposed might also represent risk factors for cardiovascular and musculoskeletal diseases. Several studies in the literature investigated the association between exposure to stress among this population of workers and development of cardiovascular and musculoskeletal diseases, however, the results are still inconclusive³.

According to Dejours, work influences the lives of people, and the way how it is performed might cause disease⁴. To Karasek, stress at the workplace reflects a combination of factors relative to psychological demands, control over the flow or organization of work and low social support^{5,6}. Healthcare work is a cause of concern as a function of increasing demands in care delivery, high psychological pressure and the ongoing process of deterioration mainly of the working conditions⁷.

Unpredictability is a constant for prehospital care providers, as they often ignore what type of assistance will be required, the characteristics of the location and aspects that might interfere with the situation. These circumstances characterize low control over the work process⁵. Also material aspects, such as medications and life support equipment, work in conflict zones and urban violence are deserving of attention and characterize low control over the professionals' own tasks. These workers are subjected to stressful

conditions due to the need for rapid and accurate decision making. The high level of psychological demands posed by their activities characterize ergonomic risk⁶.

Work relationships might directly interfere with how the aforementioned situations are perceived or faced. The reason is that strengthening social relationships developed in the workplace might often result in better patient care⁸⁻¹⁰. Social networks are strategies that contribute to control or reduce occupational stress. According to some authors, occupational stress as source of mental suffering at work involves three dimensions: low control, psychological demands and social support²⁻⁶.

Social networks are characterized by mutual relationships among actors. Actors might be individuals or organizations, and relationships are the links among them. One might investigate networks based on the frequency of contacts (weak or strong links), characteristics of relationships (family, occupational, friendship, among others) and content of the information exchanged¹¹.

Exchange, the fruit of the links established among actors, might be considered as the nodes that constitute the structure of social networks¹². The latter, in turn, are closely related to the social capital, which in most cases is seen as a network of relationships among individuals or cooperation groups. As a function of the resources resulting from social networks, their components are able to relate one to another through norms, beliefs, values and feelings (of recognition, respect and friendship). They further establish relationships for the purpose of promoting the group based on joint action, commitment, recognition and learning¹³.

Studying networks and social capital is a relevant method to understand the functioning of work organizations, and is a tool for analysis of the psychosocial risks associated with job activities¹⁴. The aims of the present study were to investigate networks of relationships among workers in SAMU-Ceará, Brazil, and to establish how much they enable the use and strengthening of the social capital and contribute to attenuate occupational stress.

METHODS

The present descriptive, exploratory and qualitative study was conducted with a work team. We chose the qualitative approach because it is able to include meaning

and intentionality as inherent to actions, relationships and social structures¹⁵. The study was conducted at SAMU-Ceará Pole I, located in the city of Eusébio, which is a part of Fortaleza metropolitan area. The Eusébio headquarters is the seat of the medical priority dispatch (MPD) center, and also where MDP assistant technicians (MPDATs) are allocated. MPDATs are charged of answering phone calls and refer cases to MPD physicians. Headquarters were designed in compliance with the physical standards established in Administrative Regulation GM/MS no. 1,010, from 21 May 2012¹⁶.

We conducted interviews to investigate the formation of social networks. As interviewees were selected three employees from both sexes who had worked at the service for more than one year. Later on we defined accessibility as inclusion criteria, and individuals mentioned as participants in the formation of social networks were invited to participate in the study. Two of them were interviewed to investigate the socio-professional relationships and working conditions in SAMU-Ceará.

The method used for identification of the relationship network was based on the social network theoretical-methodological framework, which reveals relationship networks through graphic representations of interactions among subjects. Each of the three interviewees described their social networks in the workplace. In compliance with the network identification method, they identified the individuals with whom they had the most relevant positive or negative relationships by name, function in the service and type of relationship¹⁷.

Organization and analysis of the data needed to evidence structural characteristics, such as network size and density, were performed with computer programs UCINET 6.123 (Analytic Technologies, Lexington, United State) for entering and handling data, and NetDraw 2.38 (Analytic Technologies, Lexington, United States) for visualization of the network map¹⁸. Interviewees and the individuals named by them as members of their personal networks are represented as “S” on the map.

Textual analysis of the narratives obtained in the interviews was performed with program Interface de Recherche pour les Analyses Multidimensionnelles de Textes et de Questionnaires (iRaMuTeQ) (Laboratoire d'Études et de Recherches Appliquées en Sciences Sociales, Université de Toulouse, Toulouse, France). This program, developed in 2009, enables various types of textual data analysis, from the

most simple — as basic lexicography (calculation of word frequencies) — to multivariate approaches (descending hierarchical classification and investigation of similarity). It further organizes the distribution of words in an understandable and visually clear manner, as e.g. through similarity analysis and word clouds¹⁹. For lexical analysis, the program identifies and reformats text units and transforms them into initial context units (ICUs) and elementary context units (ECUs). In addition, it calculates the numbers of words, mean frequency and number of hapaxes (words with frequency 1); surveys the vocabulary and reduces terms based on their roots (lemmatization); creates a dictionary of reduced forms and identifies active and supplementary forms. Specificity analysis (relationships between lexicon and nominal variables) allows associating texts in the database with variables directly identified by authors in database entries, as well as analyzing textual production as a function of characterization variables, defined according to the classes of listed words¹⁹⁻²¹.

The present study was approved by the committee of ethics in research with human beings, University of Fortaleza (UNIFOR). The study protocol was evaluated and approved, ruling no. 715,719. All the participants signed an informed consent form. Thus we complied with all the ethical principles established in the National Health Council Resolution no. 466/2012.

RESULTS

CHARACTERIZATION OF INTERVIEWEES

Interviewees were employees (two nurses and one physician) under shift regimen at the time when interviews were conducted and who had worked at the service for more than one year. All three actors, i.e., the central subjects, identified as S1, S2 and S3, described their social networks for effective work. Two members of such networks, identified as Interviewee 1 and Interviewee 2, were interviewed to investigate the quality of the mentioned relationships.

S1 was a male registered nurse who had worked at SAMU-Ceará under cooperative regimen for more than one year and was allocated to the Department of Continuing Education (DCE). This was his single job. His monthly income was the equivalent of eight times the minimum

wage. He observed that his university degree (RN) made difficult for him to perform activities requiring a higher level of scientific education. At that time, he was planning to attend a specialization course in obstetrics the following term. He performed administrative tasks, namely, selection of courses taught at DCE as a function of their degree of specificity. He was also responsible for the list and delivery of available courses. He characterized relationships as positive or negative mainly based on the type of employment relationship of employees, which gave rise to affinities between peers. We discuss more thoroughly the dichotomous and conflicting relationship between permanent and cooperative employees along this article.

S2 was a female registered nurse who had been transferred to SAMU-Ceará about one year earlier and had two further jobs as municipal civil servant. She was allocated to DCE, where she performed administrative tasks, such as writing reports and filling forms of statistical data on evaluations of continuing education courses. Her total monthly income was nine times the equivalent of the minimum wage. She described less conflicting relationships within her relationship network, and also observed she had always dreamed of working at SAMU-Ceará. As hypothesis, we suspect that administration work demands less contact with others, whence the perception of less conflicting relationships.

S3 was a male physician who had worked, under cooperative regimen, at the institution since its creation about seven years earlier. He was a state and municipal civil servant, with monthly income of 15 times the equivalent of the minimum wage. He was responsible for the management of the equipment priority dispatch system and his staff included 14 MPDATs, four nurses and seven physicians under shift regimen. He also provided direct patient care within SAMU twice per week, on average. He described his work environment as precarious and presenting several challenges to be overcome. His views were centered on service delivery and on the configuration of the social network of key-elements to achieve a more practical execution of tasks.

ANALYSIS OF SOCIAL NETWORKS

The interviewees' social networks were analyzed by integrating functional and relational data, i.e., the links among individuals. The links detected based on the interviews revealed interrelationship between the networks configured by all three interviewees (S1, S2 and S3). The main actors

named 19 individuals: S1 nine (47.3%), S2 six (31.5%) and S3 eight (42.1%).

The social networks of S2 and S3 comprised a larger number of men. Among the 19 network members, nine were female (47.4%) and 10 were male (52.6%). Relationships were almost exclusively occupational, only S1 reported a relationship with T7 outside the workplace — they had met at another institution (Figure 1).

The actors in S1's network afforded positive or negative support as a function of the type of their employment relationship, thus facilitating or hindering the work process. In turn, S2 and S3's networks were composed of functional links, i.e. actors mentioned were the ones essential to the service.

Components U1, U4 and T8 of the analyzed networks performed management functions and played a boundary-expansion role. Thus they had a central place and were also members of other social networks (of employees who were not interviewed in the present study). For this reason, they probably received and conveyed more information and were connected through more reciprocal paths of social capital circulation.

Only actors with management positions were interconnected within the network. In S1's network only U1 had links to the networks of the other two interviewees. This finding points to isolation and lack of exchange of significant information, even though two of the interviewees worked in the same department.

Weak, unarticulated, distant and isolated links predominated, even though two of the interviewees worked in the same department. Management positions favor articulation and the development of stronger links. This was the case of U1, U4 and T8, who were coordinators of service units described in the social networks. One might infer that the relationships were poor, had low density, involved just a few actors and channeled a low flow of information. These aspects point to inconstancy in meetings for sharing information and activities among departments or of the management.

QUALITATIVE ANALYSIS OF INTERVIEWS

The textual corpus that resulted from the interviews on social networks was entered in program iRaMuTeQ. Descendent hierarchical classification generated an illustrative dendrogram of the most frequent words in each class and categorized text segments. The χ^2 test was used as method of analysis, the cutoff point being defined as words

with frequency equal to or higher than 20.00. Analysis of the interviewees' narratives led to the identification of three classes of words (Figure 2).

The most representative was class 3, which comprised 38.7% of the words analyzed by the program. Classes 2 and 1 are subgroups of class 3 and represented 37.6 and 23.8% of words, respectively. Class 1 comprises discourse elements focusing teamwork conflict and is complementary to class 2. The latter comprises relational aspects associated with organizational commitment and need for better training to improve care delivery. In turn, class 3 focuses on the nature of the work performed and how patients are treated.

Class 1 comprises narratives on the prehospital work process, as well as on feelings of recognition and social prestige as a function of the activity performed. Such narratives behaved as motivational incentive for the interviewees. In turn, success in events was described as a relevant aspect for the satisfaction they experience. They also allude to the need for continuing training and to the specificity of the service provided. The following are examples of statements included in class 1:

The most satisfying [aspect] is teamwork, I know that everybody here has the same goal of improving care delivery at SAMU. To know what I do compensates,

that someone was aided and got well, or that something was done for him not to die (S1).

The most important of all, right now, is to have a trained team, prepared, equipped to help you. This is all there is, guys. Social status at work. You arrive somewhere and someone says: "This guy is a SAMU doctor," people look at you differently (S2).

High levels of stress and weakening of socio-professional relationships are due to both difficulties in teamwork and conflict among employees. Both factors were described as hindrances to adequate performance of work. As a function of common interests and voluntary attitudes, or as a result of the imposition of a standardized work structure, individuals are in constant interaction and exchange. For some, this situation serves as support in the tasks they need to perform or for the solution of everyday problems. When networks are connected, collaboration develops, which is not always the case:

You see, honestly, I'd bring in a psychologist to treat everybody, to reduce this feeling of always wanting to be better than another one, pull a fast one on someone ... for everybody to feel they're equal, that everybody's important at the same level (S1).

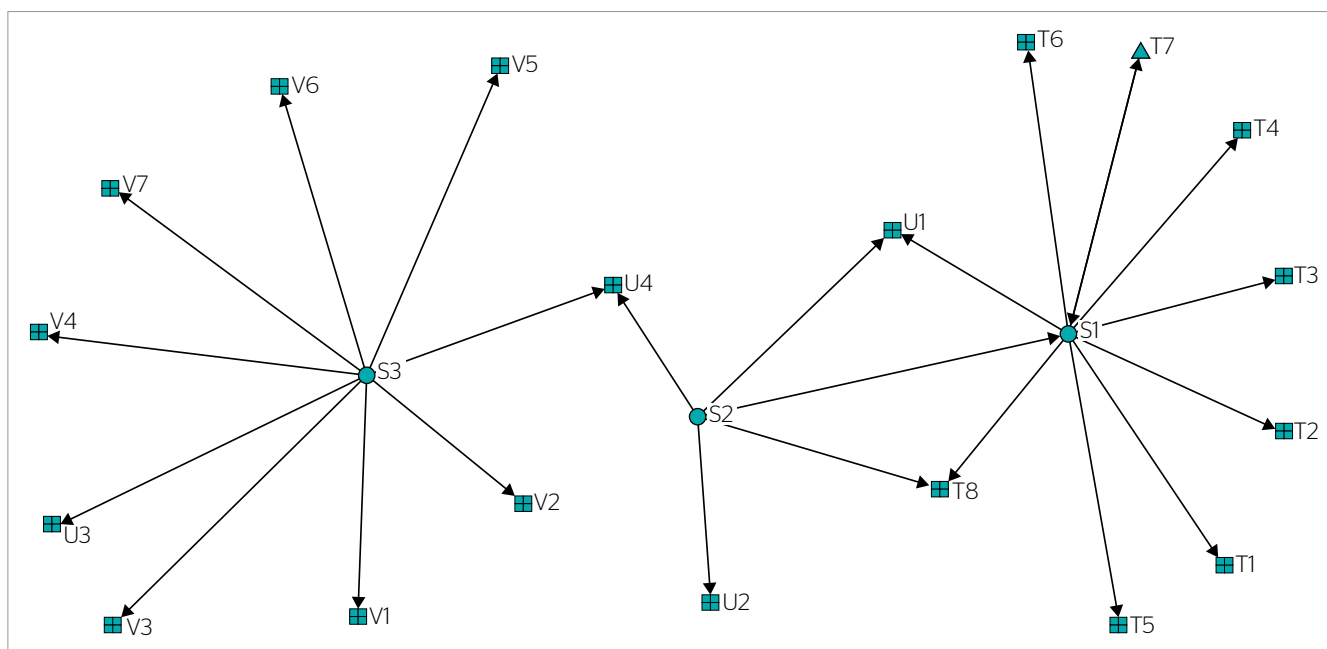


Figure 1. Social network of employees at Mobile Urgent Care Service, Ceará (SAMU-Ceará), 2017.

I think that psychological care for everybody here's important, because everybody has a stressful job (S2).

The type of communication between MPD center and intervention teams was also mentioned as a hindrance to teamwork. Feedback on care delivery and the event location is often not accurately provided, because it is based on telephone calls, eventually through the personal phones of the personnel.

The issue of communication here is awful, awful. We should long have a radio system covering the full state, so we could communicate more easily with teams, because communication is crucial during care delivery (S1).

I only hear people saying that communication doesn't work. The guy away doesn't tell what was written right, they guy at the center entered the data wrong, the exact time when things [happened] (S3).

Relative to class 2, we identified factors related to professional action pervaded by commitment and responsibility, as well as to the need for professional updating. The four words most frequently mentioned were: service, way, right and commitment.

I believe that everybody who is and remains many years at SAMU does so because they like what they do, because if they didn't like, I've seen many cases, someone comes, stays for some time, works for some time and [then] leaves (S2).

To me, to work is to do activities that make you happy, motivate you to always look for knowledge, always look for greater integration with the service and always try to show the best of you (S2).

The SAMU professional, he's seen as the specialist among the specialists, thus he has to appear, thus he has to always behave, this is the cause of the extreme need for you to learn and train all the time, to provide better service (Interviewee 1).

Class 2 also comprised narratives on types of employment relationship and hiring regimens — cooperative, permanent and outsourcing. The cooperative comprised about 40% of the workers involved in interventions. Permanent employees were of two types: the ones who had directly applied to a SAMU position and the ones transferred from other institutions. In turn, the outsourced employees mainly had administrative functions, including MPDATs and ambulance drivers.

We identified subgroups within the support networks and isolation of actors within subgroups according to the type of employment relationship. In social network analysis terms, these internalized groups are called *clicks*, because they interrupt the communication between actors. These thus are negative relationships which hinder integration, and in the case of occupational social networks, they hinder the very delivery of service:



Figure 2. Categorization of classes of words mentioned in interviews with staff members at Mobile Urgent Care Service, Ceará (SAMU-Ceará), 2017.

Therefore, if as cooperative [employee] I cannot strengthen myself with an also cooperative coworker, then I'm becoming weak at work. I can't do my job completely all the time. I'll be restricted somehow, because I'll be limited. I don't have an active voice by myself, but in a group it's easier, I protect myself and my network (S2).

Now I believe that the permanent [employees] are predators of themselves, because they only want access to other permanent [employees], but at the same time they don't want more permanent [employees] to be hired [...] Because, if I let someone come, I'll lose my extra [benefits] (S3).

In class 3, which corresponds to the service nature, the most frequently mentioned terms were: hospital, nurse and technician. Although social and technical aspects were the most relevant, some discourse elements pointed to the relevance of teamwork, the strengthening of social networks in particular:

So, this is teamwork, everybody participates, and the job is very gratifying, for instance, when you're in a good team things run smoothly, you get there and intubate [the patients], the driver immobilizes [them] and the nurse gets the vein in the first attempt (Interviewee 2).

I can't respond a call with just one doctor, I can't respond a call with just one nurse, and I can't respond a call just with the paramedic (Interviewee 1).

All three must be there, all three have to work as a team for care delivery to succeed and have a positive outcome, if they aren't, it doesn't work. This here is teamwork (S3).

Term "people" plays a centralizing role among the narratives and is linked to elements "person" and "to work." In this case, "people" alludes to the actors, i.e., the study subjects, "person" to service users and patients and "to work" to situations experienced within the context of prehospital care delivery. These terms are intertwined with others of lesser strength, but extremely important to understand the structure of the analyzed narratives.

In regard to element people, one might assume that actors rated the hospital-patient relationship as difficult. Nevertheless, they observed they can rely on the department and/or manager and consider teamwork (physician, nurse and nursing technician) a relevant means to improve care delivery.

Term person had direct relationship with the verb to need, which in turn was linked to elements care delivery, system and service. This instance reinforces the previous findings relative to communication between MPD center and intervention teams. It is worth noticing that weakening or lack of relationship between parties results in hindrances with consequent repercussion for the patients themselves. One might assume that to SAMU professionals, to work means to know how to provide aid at the right time.

This set of elements emphasizes the dynamic nature of the decision-making process under extreme circumstances. Another interrelated group of terms included: to find, problem, to arrive, to take, to place and ambulance. We understand that for teams finding the location of an event/arriving there and to take/to place the patient into the ambulance are problems. These elements point to the need to strengthen the relationship network involving intervention teams and MPD, especially at the time of calls. Such strengthening might improve the communication among workers to the point of also boosting the efficiency of care delivery.

DISCUSSION

The social networks at SAMU-Ceará represent a set of workers who establish mutual relationships to satisfy the demands and needs of service users in an integrated manner while attempting to respect the knowledge and autonomy of each member. Nevertheless, the effectively developed networks are characterized by poor collaboration ("star" shape) with few transposition points (bridges) between the various networks. These configurations allow inferring the presence of conflict, leading to problems in the performance of tasks and probably also suffering caused by work.

A network involves establishing cooperation and reciprocity agreements and alliances to overcome the barriers represented by clicks or small internalized groups. A cooperation network denser than the one we found here would

represent a means to find solutions for intervention on the complex social reality. Networks are not the goal as such, but a “part of a methodology for action which allows maintaining, increasing or creating desirable options for the members of a social organization”²⁰. The more options, the more the opportunities for the members of an organization to see themselves as agents in the solidary construction of their network and the greater the social capital available to act more effectively.

Within the ongoing scenario of labor deterioration, the employment relationship is unstable. Two of the actors mentioned as members of the investigated networks (V7 and V8) were laid off soon after the interviewees. Instability at SAMU-Ceará led to issues related to the mental suffering of employees, which possibly reflects in the poor quality of the identified networks.

The notion of strong and weak links was discussed previously^{10,21}. Individuals with more distant relationships (weak links) are less involved with other network actors, while the ones with closer relationships (strong links) have greater involvement²¹. We found a higher prevalence of weak, unarticulated, distant and isolate links. These links are thus poor and have low density, involving just a few actors.

The larger the number of links per node, the greater the social capital²². Therefore, the low density of the investigated network denotes a low social capital available for the support network. Interactions and reciprocity might ensure greater closeness among social actors, in which the dynamics to accomplish common goals involve indirect means, which might result in a climate of discomfort at the workplace.

The diversity of networks is directly related to the amounts of social capital^{23,24}. In turn, the volume of social capital for individuals depends on the volume of economic, cultural and symbolic capital that circulates through the networks in which they participate. On these grounds, we might infer that the networks in which the study subjects were involved

were poor in terms of available resources and channels for information, as they exhibited a truncated pattern.

CONCLUSION

The social networks at SAMU-Ceará represent a set of workers who establish mutual relationships to satisfy the demands and needs of service users. However, these networks evidenced conflict, consequently causing mental suffering at work. Formation of social capital as a means of self-protection gives rise to denser, more articulated networks, different from the ones identified in the present study. The narratives collected in the interviews clearly point to the presence of subgroups of permanent and cooperative employees who relate one to another, but little to other network members. This situation hinders the execution of tasks and predisposes to situations likely to cause suffering. In this regard, the social networks need to be strengthened as a means to ensure the resources required to afford better care delivery and promote well-being at work. Thus strategies for promotion of healthy behaviors aiming at increasing social support might be developed. Consideration of the complexity of the identified aspects demands interventions on the working conditions, especially as concerns organization and socio-professional relationships, to improve the quality of the relationship and cooperation networks. In addition, we believe that such measures might reflect as better care delivery to the population.

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