THE USE OF SOCIAL NETWORK ANALYSIS FOR EVALUATING THE RESILIENCE POTENTIALS: A STUDY OF AN INTENSIVE CARE UNIT

Vanessa Becker Bertoni
Department of Civil Engineering, Universidad Federal do Rio Grande do Sul, Brasil

Abstract

The need for improving the resilience of healthcare systems has been recognized by academic, governmental, and industrial stakeholders. The path to enhance the resilience of a healthcare system is by development its four potentials: responding, monitoring, anticipating, and learning. This doctoral thesis aims to understand how social network analysis can improve resilience in a sociotechnical system through the social parts that make the system work. A research question "How to use social networks to assess resilience in a sociotechnical system?" guide this thesis compound by three main articles. The first paper is based on a research science design that focuses on how social network analysis (SNA) can support the analysis of resilience in healthcare systems. The second paper uses SNA for evaluating the resilience in an intensive care unit. The survey complemented by semi-structured interviews with 14 ICU´s professionals as well as by 80 hours of observations of the daily work. The SNA survey consisted of (a) characterization of the respondent; three contextual factors, that may or may not interfere the system resilience: interruptions, rounds, and handovers; (b) a full roster of ICU staff, from which the respondent should select those with whom they rely upon for advice or information; (c) questions on the contribution of social interactions with each selected staff for the operationalization of each resilience potential – there were three questions for each potential; one related to the frequency of the interaction, one related to the availability of the contacted person, and another related to the reliability of the received information; (d) 23 questions on the general implementation of the potentials, based on the resilience assessment grid; (e) three closure questions on the general perception of the ICU´s resilience, patient safety, and staff safety. The last one, sought through to model the resilience system with Exponential Random Graphs Models (ERGM). The aim of an ERGM is to identify the processes that influence the formation of links in networks understanding social structure and network processes that can lead to a more resilient healthcare structure. At the end of this research, the main expected academic contribution is related to understanding how social network interactions influence and are influenced by organizational resilience, as well as to propose guidelines to support resilience in complex sociotechnical systems.

Keywords: Resilience Engineering; Complex sociotechnical system; Social network Analysis; healthcare.