

**Title:**

Influence of Nurse Social Networks on Evidence-Based Practice (EBP): Results of an Exploratory Study

**Nan M. Solomons, PhD**

Online College of Graduate and Professional Studies, University of New England, Portland, ME, USA

Judith A. Spross, PhD

School of Nursing, University of Southern Maine, Portland, ME, USA

Gerri Lamb, PhD

College of Nursing and Health Innovation, Arizona State University, Phoenix, AZ, USA

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**Session Title:**

Promoting Evidence-Based Practice

**Slot:**

R 03: Monday, 31 July 2017: 10:15 AM-11:30 AM

**Scheduled Time:**

10:35 AM

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**Keywords:**

EBP/evidence-based practice, Interprofessional communication quality and Social network theory, research and methods

**References:**

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**Abstract Summary:**

The EBP literature suggests that nurses are more likely to turn to each other for answers to clinical questions. This study suggested that understanding nurses' relationships with each other and their social networks may lead to more effective strategies for improving the uptake of evidence in clinical practice.

**Learning Activity:**

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
Explore the role of nurse relationships in the use of evidence in practice	Overview and background of the study A. Summary of findings from research on nurses and EBP B. Research question Theoretical framework for the study A. Key concepts from social network and quality improvement research B. Relational model of communication and EBP adherence
Recognize the relevance of social network research methods and terminology to examining the relationships and communications that may affect EBP adoption and adherence	Study results and interpretation A. Review of variable definition B. Correlation statistics a. Communication openness with social network variables b. Communication accuracy with social network variables c. Communication timeliness with social network variables
Examine the implications of the findings from this study of social networks and EBP for models of EBP adoption, implementation, and adherence	A. EBP models B. Future study design including replication

**Abstract Text:**

**Purpose:**

Nurses' adoption of and adherence to evidence-based practice (EBP) has been an ongoing concern for more than four decades (Eaton, Meins, Mitchell, Voss, & Doorenbos, 2015; Squires et al., 2011). Efforts to improve nurses' EBP adoption and adherence rates have demonstrated few results (Hanrahan et al., 2015; Thorsteinsson & Sveinsdottir, 2014). Findings by Benner et al. (1997), Pravikoff et al. (2005), and Estabrooks et al. (2005) suggest that nurses prefer to obtain clinical information through communication with colleagues, that is, their social network. Even though research on quality improvement and EBP suggest that relationships and communication are relevant, few studies have used social network methods to examine the role communication may play in the effective adoption of and adherence to EBP (Chambers, Wilson, Thompson, & Harden, 2012; Cunningham et al., 2012).

The purpose of this presentation is to examine the relationship between nurses' communication patterns (who talks to whom) and their perceptions of the quality of that communication, concepts integral in understanding nurses' adoption of EBP. The findings here were part of a larger study exploring how communication patterns and communication quality were related to use of evidence-based transitional care practices.

**Theoretical model**

The model developed for this study was informed by diffusion of innovations theory (Rogers, 1995), social network theory, quality improvement and EBP literature, and relational coordination theory (Gittel, 2002). Rogers' diffusion of innovations theory is one of the most common frameworks for EBP research. His emphasis on the role of communication in spreading innovation provided an important bridge to social

network theory and research. Many of Rogers' concepts like communication channels and boundary spanning have been elucidated and operationalized in social network research (Cunningham et al., 2012; Valente, 2010). Social networks are comprised of nodes (people or groups) and ties, the connection between nodes. Ties are characterized as strong or weak. Strong ties have a common background and possess the same knowledge whereas weak ties do not share a common background and have different sources of knowledge (Burt, 2007). Social networks comprised of strong ties are more interconnected and inwardly focused (Granovetter, 1973). Key social network scientists like Granovetter and Burt have demonstrated that the strength of the relationship and the position of the individual within the social network can influence the quality of the communication. Social network concepts operationalized in this study include density, fragmentation, and centrality.

Conceptualization of the quality of communication and its impact on care quality draws from the quality improvement and EBP literature. In a national ICU study, Shortell and colleagues (1992) reported that ICUs with high communication scores had better patient outcomes. High performing ICUs were not only more likely to be communicating within their unit but also communicating regularly with other units within the hospital and with the administration, more so than lower performing units. Two factors reported by Shortell and colleagues (1992) were the importance of open and accurate communication. Similarly, findings from the EBP literature report that nurses often obtain information from each other (Eaton et al., 2015; Thorsteinsson & Sveinsdottir, 2014) because it is relevant and timely (Estabrooks et al., 2005).

Relational coordination theory (Gittel, 2002) provides support for the link between the relational aspects of communication flow and communication quality identified by Shortell et al (1992). Gittel (2002) found that initially the relationship was the primary influence on communication quality; over time she found that influence was bidirectional: communication influenced the relationship and the relationship influenced communication.

Diffusion of innovations theory often informs EBP research (e.g. Eaton et al. (2015) and Hanrahan et al. (2015)). The addition of social network theory and methods allows a more granular examination of the roles of relationships and communication in EBP adoption and adherence.

## **Methods:**

A convenience sample of 10 adult medical-surgical units from six hospitals, five home care agencies, and six long-term care facilities was used. A total of 273 hospital staff (nurses, discharge planners, supervisors and Certified Nursing Assistants) and 69 post-acute (home care and long-term care) staff were surveyed. Analysis and discussion of post-acute data are outside of the scope of this presentation.

Hospital staff completed surveys about two communication patterns, one for patient care and one for patient discharge; communication quality; relationship quality; and demographic characteristics. Post-acute care staff completed a similar, abbreviated survey.

**Communication patterns** Nursing and discharge planning staff were asked to indicate their frequency of communication over a 30-day period for each staff person. Frequency was measured using a 5-point Likert scale, ranging from 1, not at all to 5, daily. Higher values of frequency corresponded to greater tie strength.

**Communication quality** Communication quality was measured using the ICU Nurse-Physician Questionnaire (Shortell et al., 1992) within-group communication scale, comprised of three subscales: (a) within-group openness (four items), (b) within-group accuracy (four items), and (c) within-group timeliness (three items). Items were measured using a 5-point Likert scale ranging from 1, strongly disagree to 5, strongly agree.

## **Results:**

The level of analysis for this study was at the unit level. Social network measures described the communication patterns across the unit. Statistical significance was set to .10 due to the exploratory nature of the study. Each communication pattern variable was correlated with each communication quality variable. Non-parametric correlation was used because social network data do not have a normal distribution (Borgatti, Everett, & Johnson, 2013). Before describing the results, it may be helpful to define the social network variables.

*Density* is a measure of overall cohesiveness among nodes in the social network; when density is high there is greater cohesiveness within the social network. *Fragmentation* is a measure of the presence of cliques or subgroups within the social network (Wasserman & Faust, 1994); when fragmentation is high there is low cohesion overall and a greater number of subgroups within the social network. *In-degree centralization* is a measure of hierarchy (Freeman, 1978). When in-degree centralization is high then communication is centralized among a few nodes; in contrast, when in-degree centralization is low, communication is decentralized within the social network. The results and the interpretation are reported by communication quality variable.

### *Communication Openness*

Density and in-degree centralization were both strongly, negatively, and significantly associated with communication openness ( $r_s(10) = -.80, p = .005$ ;  $r_s(10) = -.57, p = .083$ , respectively). The strength and direction of these associations in this study suggest that highly interconnected social networks with centralized communication may not be conducive to innovative ways of thinking. In contrast, the third social network variable, fragmentation, was strongly, positively, and significantly associated with communication openness ( $r_s(10) = .72, p = .018$ ). The strength and direction of this association in this study suggests that EBP adoption is more likely to occur within small groups rather than larger groups.

### *Communication accuracy*

Density was strongly, positively, and significantly associated with communication accuracy ( $r_s(10) = .56, p = .093$ ). The strength and direction of this association suggests that social networks which have greater interconnectedness are more likely to believe that the information received from other members in the social network is correct. In contrast, fragmentation was moderately and negatively associated with communication accuracy ( $r_s(10) = -.49, p = .15$ ), a finding that approached significance. The strength and direction of this association suggests that communication received from other groups is not perceived to be as accurate as the communication from within the group. In-degree centralization was moderately and negatively associated with communication accuracy ( $r_s(10) = -.34, p = .334$ ). The moderate strength and direction of this association suggests that there may be another unmeasured variable such as leadership style, teamwork, or demographic variables that would contribute to a hierarchy among unit staff.

### *Communication timeliness*

There were no statistically significant relationships between the social network variables (density, fragmentation, and in-degree centralization) and communication timeliness ( $r_s(10) = .06, p = .868$ ;  $r_s(10) = .36, p = .343$ ;  $r_s(10) = -.08, p = .828$ , respectively). It is possible that the social network variables dropped from analysis—diameter, core-periphery, and average path length—may have led to different findings, given the role of these variables in the model.

## **Limitations**

In general, social network analysis requires at least a 50% response rate, especially for measures that represent distance (core-periphery, diameter, average path length) (Borgatti, Carley, & Krackhardt, 2006). Response rates among some units in the sample were less than 50%; therefore, measures of distance were removed from the analysis. Other social network measures such as density, fragmentation, and in-

degree centralization maintain reliability at lower response rates (Borgatti et al., 2006) and were included in the analysis.

**Conclusion:**

The research question arose from findings in the EBP literature that nurses turn to each other for information, a finding that has been deemed at least puzzling and perhaps even concerning (Squires et al., 2011). The model and findings from this study suggest that understanding nurses' social networks may help us understand this reported phenomenon and why and how nurses' social networks contribute to or impede adoption of EBP. Implications for design and implementation of future research will be discussed.