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Original Article

The Nurse–Nurse Collaboration Behavior Scale: Development and psychometric testing



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ABSTRACT

Objective: To develop and test the reliability and validity of a new instrument, the Nurse–Nurse Collaboration Behavior Scale (NNCBS).

Background: The importance of cooperation among nurses is widely acknowledged, but is a lack of scientific studies regarding the behavioral interactions associated with nurse–nurse relationships throughout the process of patient-centered care. Therefore, there is a great need to develop a reliable scale to measure nurse–nurse collaboration behavior, which is what we have generated in this study.

Methods: The 46-item Nurse–Nurse Collaboration Scale was developed using a process of item design, refinement, and testing for both reliability and validity. In 2014, the 202 nurses from the International Department of Services participated in this pilot study. Cronbach's a coefficients and test–retest reliability coefficients were calculated in order to evaluate this new scale's internal consistency and stability. Exploratory factor analysis was calculated using a principal factor method with promax rotation to evaluate the scale's validity.

Results: Exploratory factor analysis yielded four factors and 23 items. The overall Cronbach's a coefficient of the scale was 0.929. The item-total correlation values were overall high, ranging from 0.427 to 0.751. For the entire scale, the r values of the test–retest reliability correlations were 0.764.

Conclusion: The NNCSB Scale developed in this study demonstrates acceptable reliability and validity for measuring the level of NNCSB. Its implementation on a broader scale would at the very least guide and promote collaborative relationships between nurses involved in patient care. It should be noted that the scale requires further psychometric testing using a larger sample size of nurses who also represent a wider diversity of backgrounds, as well as researchers who are encouraged to improve the instrument.

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¹ Chuli Liao wrote the draft and Ying Qin guided the whole process of the study.

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1. Background

Numerous studies have reported that there is a widespread occurrence of medical errors during drug administration, which ultimately causes a rise in adverse drug effects. These errors can be primarily attributed to inadequate team-work, poor communication and weak interpersonal interactions [1–5]. A dramatic improvement in communication, the transmission of information, effective decision-making, a deeper demonstration of respect for the roles of nurses, as well as collaboration and teamwork among both nurses and physicians have been reported to be associated with reduced medical errors, increased nurse job satisfaction and improved patient safety [6–13]. The healthcare institutions in both Europe and the United States are trying to improve the quality of patient care by strengthening the collaboration among healthcare professionals [7,8]. The Chinese healthcare reform that focuses on client-centered care puts a great emphasis on collaboration, considering that critical decisions are forced to be made in a limited amount of time. In addition, patient needs continue to expand in number and diversity without a simultaneous increase in staff number. Nurse/physician collaboration is studied worldwide, however collaboration among nurses alone has not been thoroughly investigated. Since nurses are physically present with patients to a greater degree than any other clinician, they are in a unique position to both assess patient responses to therapies and then communicate those changes in order to ensure the most appropriate therapy is being administered. Nurses are provided with a large portion of the responsibilities during patient care. Therefore, collaboration and strong communication among nurses is critical to maintaining a safe and effective therapeutic environment for patients.

Collaboration and teamwork among nurses have been identified as an indication of nursing ability, and therefore increasing the level and quality of collaboration among nurses will greatly improve the work environment and facilitate an improvement in patient safety and health improvement [14,15]. Inadequate communication and collaboration have been identified as primary contributors to medical error, adverse events, operative and postoperative complications, and treatment delays. Studies have reported that poor interactions, withholding support, lack of coordination, tension and intimidation are prevalent among nurses [5,16]. This perceived hostility among nurses is largely due to more experienced nurses being thought of as “bitchy and cliquy”, since most of the more inexperienced nurses have reported being verbally abused by the superior nurses [17,18]. The conflicts among nurses may also result from organizational constraints, leadership style, inadequate interpersonal relationships and violence among social equals who consider themselves powerless [5,17–19].

Research in both Europe and the USA has focused on self-report measurements of collaboration among nurses and physicians. While there are numerous instruments to measure nurse–physician collaboration, there is only one current instrument that measures collaboration among nurses, whereas others that are related to nurse collaboration are either a component of an organizational appraisal instrument

or a subdomain of a larger construct measured by only four or five questions [23,24]. The Nurse–Nurse Collaboration Scale, developed by MB Dougherty, measures organizational climate with a focus on communication, coordination, problem-solving and conflict management. These categories come from the ICU Nurse–Physician Questionnaire (ICUN-P-Q) that was developed by Shortell [23,25]. The Nurse–Nurse Collaboration Scale measures the overall nurse attitude toward cooperation climate by measuring each nurse’s self-assertiveness towards each other, however it does not measure specific behaviors associated with nurse–nurse relationships in the process of patient-centered care. Therefore, it is clear that there is a true need to develop a scale to thoroughly and accurately measure nurse–nurse collaboration behavior.

This article reports the development and psychometric testing of a new instrument, the Nurse–Nurse Collaboration Behavior Scale (NNCBS), that will serve to analyze factors that promote collaboration and improve collaborative system planning.

2. Methods

2.1. Definition of nurse–nurse collaboration behavior

The concept of nurse–nurse collaboration behavior is based upon the current definition of nurse–physician collaboration. Henneman interpreted “collaboration” as a cooperative venture based on shared values such as the concern and respect for others, performance goals, and commitment on the part of all parties involved [20]. Baggs and Schmitt emphasized the importance of the development and maintenance of collaboration, which requires shared decision-making, working together cooperatively, open communication and coordination during planning and implementation of care [21]. Stapleton believed the autonomy within her scope of practice and power that were based on knowledge and experience are two more essential attributes of collaboration [22]. The definition of collaboration between nurses and physicians will serve as the basis for the development of the definition of nurse–nurse collaboration behavior. This term will be defined as any actions of communication, coordination, professionalism, and conflict management that are upon common goals, mutual trust and respect. These domains were adopted as a framework for our study.

2.2. Instrument development

The NNCBS was devised by a process that consists of item design, item refinement, as well as the testing for both reliability and validity.

2.2.1. Item design

Items were designed based on a sequential process that consisted of literature review, observation of nurse collaboration within the ward and key-informant interviews of 15 nurses by means of a semi-structured format. These nurse subjects work in either internal medicine, surgery, the ICU, Emergency,

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