Understanding Doctor-Nurse Relationships:  
Do Nursing Student Perceptions Change Over Time?

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Abstract

Preventable medical errors cause up to 98,000 patient deaths in the United States each year. The culture of the workplace appears to be a key contributor to many of these errors. Before transforming a culture, the existing culture must be understood. To aide in this understanding a new survey instrument was developed to explore actual and perceived behavioral norms (both descriptive and injunctive) regarding the culture of nurse-physician relationships and the impact of that culture on turnover and perceived medical error. In an effort to validate the instrument before distributing to the larger survey population, a group of undergraduate nursing students completed the draft instrument. This group included a mix of students at different stages in their studies, including many who had previous professional experience in healthcare. The results of the initial study provide insight into how the perceptions of nursing students change over the course of their education and experience. This article explores the development of this instrument and the results of the pilot study.

Keywords
Healthcare, Culture, Nurse-physician Relationship

1. Introduction

At present, the U.S. healthcare industry is facing a variety of significant challenges as pressure continues to increase to deliver top quality care at lower costs. A key issue within healthcare quality is the topic of reducing adverse patient outcomes. Two key drivers of these outcomes, and related medical errors, are staffing shortages caused by high levels of turnover within the nursing profession and preventable medical errors [1, 2]. In a landmark report, To Err Is Human, the Institute of Medicine estimated at least 44,000 and perhaps 98,000 hospitalized patients die every year due to preventable medical error [3]. Though the reasons behind the medical errors are multifactorial, studies have indicated the culture of the workplace with regard to nurse-physician relationship is a key contributor [4, 5].

Nurses have reported disruptive physician behaviors as a threat to quality of patient care [5-9], nurse retention within the profession [5-7, 9] and effectiveness of nursing practice [3, 5, 7, 8]. In addition to adverse patient outcomes, disruptive behavior is also associated with increased nursing dissatisfaction and intent to leave the profession [4, 10, 11]. These issues contribute to the projected nursing shortfall expected to continue to challenge healthcare delivery in the future [12]. Disruptive behaviors have also been linked specifically to negative patient outcomes, including serious injury and death resulting from medical error [4, 13-16].
To address medical errors, the Institute of Medicine has emphasized a solution of instilling a robust safety culture in the workplace [3]. Before we can transform the culture into one focused on safety, we must first understand the existing culture, because sustainable changes come from transforming the existing culture (rather than imposing an external culture). To aid in this understanding a new survey instrument was developed to explore actual and perceived behavioral norms regarding the nurse-physician relationship culture and the impact of that culture on nursing turnover and perceived medical error. In an effort to validate the instrument before distributing to a larger survey population, a group of undergraduate nursing students completed a pilot study. This group included a mix of students at different stages in their nursing curriculum, including many who had previous professional experience in healthcare. The results of the initial study provide insight into how the perceptions of nursing students change over the course of their education and experience. This article explores the development of this instrument and the results of the pilot study.

2. Literature Review

Relationships between physicians and nurses are important for several reasons. How well these two groups work together affects the actual quality of care that patients receive[17] and the perceived quality of care from the perspectives of patients[6], nurses [5-9], physicians [5, 8, 11] and administrative executives [4, 11].

Schmalenberg and Kramer [5] referenced a classic study conducted by Knaus, et al. [18] on intensive care units (ICUs) in thirteen large hospitals that reported ICU patients cared for by nurses and physicians who worked collaboratively had lower “acuity-adjusted” mortality rates than did patients cared for by less collaborative nurses and physicians. Fewer deaths and transfers back to the ICU are positive outcomes for patients cited in other studies[5]. In addition to patient outcomes, high-quality nurse-physician relationships result in increased satisfaction among nurses and physicians, increased retention of nurses within the profession and increased autonomy for nurses [5, 6, 8, 11].

In 2001, the American Hospital Association (AHA) estimated that 126,000 nursing positions were unfilled in the United States[19]. In a recent document, ‘Workforce 2015: Strategy Trumps Shortage’, AHA quoted the estimation of Peter Buerhaus and colleagues at Vanderbilt University who projected a shortfall of registered nurses in 2025 as 260,000[20]. Another study by Juraschek and colleagues estimated the shortfall of RNs would be as high as 1,000,000 by 2030[21]. The nursing shortage affects more than nurses and their workload, it impacts the entirety of service delivery in healthcare. To address the challenges of upcoming nursing shortages, the AHA recently recommended redesigning work processes and introducing new technologies to increase efficiency, effectiveness, and employee satisfaction [20].

Rosenstein conducted an extensive study on nurse-physician relationships by surveying 1200 participants from 84 locations that included nurses, physicians and administrative executives [7]. In this study, almost all nurses reported experiencing disruptive behaviors by physicians, but only a small percentage of physicians reported exhibiting disruptive behavior. Both physicians and nurses agreed that it impacted nurse’s job satisfaction and retention.

Perhaps the most extensive and organized work on exploring nurse-physician relationship norms has been conducted by Schmalenberg and Kramer [5]. Over a six year time period, they interviewed and surveyed over 20,000 thousand RNs of Magnet and comparison hospitals regarding their perceptions of RN-MD relationship norms. They identified 5 different relationship types from the responses of the RNs: collegial, collaborative, student-teacher (physician teaching), student-teacher (nurses teaching), friendly-stranger, and hostile / adversarial. Their findings provide evidence of mostly positive relationships among physicians and nurses (80%+ in magnet locations, 60%+ in comparisons), with a simultaneous material level of adversarial relationships reported (30%, 13%). These relationship types provide a framework to measure specific nurse and physician behaviors as they relate to the interactions between the two groups. By using this framework, researchers can better understand the nature of interactions and relationships between nurses and physicians and begin to explore social norms.

2.1 Rationale for Current Study

Although a number of studies have examined the nature of RN-MD relationship culture, they have predominately focused on exploring the descriptive relationship norms of RNs and MDs, i.e. how nurses and physicians are actually behaving around each other. The injunctive relationship norms [22], the behaviors which are perceived as being approved by others, of RNs and MDs are yet to be investigated. This gap in the literature is important because
one’s perceptions of what behaviors others approve of are quite frequently inaccurate, which can lead to inappropriate behavior. For example, people may behave uncivilly because it is mistakenly assumed that such behavior is commonplace and accepted. For example, some doctors may throw instruments in the OR suite because they believe many other doctors exhibit this same behavior, when in reality such events are extremely rare.

Social norms theory suggests that people tend to behave in the way they believe is most typical of and accepted by their peers, the injunctive norms [23]. This could lead to unsafe or undesirable choices if the perceptions incorrectly portray the unsafe or undesirable choice as normal.

This study used the relationship framework created by Schmalenberg and Kramer [5] to develop a survey instrument that measures relationship behavior between nurses and physicians. The framework was augmented using Social Norms Theory to move beyond the simple descriptive norms of these behaviors. Instead, items are structured to also measure the injunctive norms within the groups as well. This in-depth understanding of descriptive and injunctive behavioral norms, as experienced and perceived by both physicians and nurses, is required to determine if gaps exist in nurse-physician descriptive and injunctive relationship norms. If found, these gaps can be leveraged to improve culture, thereby reducing medical error and improving other negative clinical and organizational outcomes associated with incivility, disruptive behavior, or workplace culture.

3. Development of Instrument

The instrument has been developed in three different segments. The first segment has four sections that examine the descriptive and injunctive interpersonal relationship norms experienced by the RN and as perceived by them regarding their coworkers’ norms. Each section contains specific questions to assess the five different types of relationship culture outlined by Schmalenberg and Kramer: collegial, collaborative, student-teacher, formal and hostile [5]. For the purpose of this study, two questions were developed to address the descriptive and injunctive norms for each relationship type. The basic distinctions between these types evolved from the nature of authority regarding patient care and cooperation among the physicians and nurses. Each of the five relationship types are as follows:

- **Collegial** – describes equal authority between physicians and nurses regarding development and execution of the patient care plan.
- **Collaborative** – describes mutual authority and cooperation where physicians act in a superior position in decision making.
- **Student-teacher** – describes the physicians’ role is to explain and teach issues to nurses and also includes physicians’ willingness to listen and learn from nurses regarding patient care.
- **Formal** – describes interactions based on professional needs only, where nurses are to respond to physicians when questioned. In this relationship, physicians always exercise superiority over nurses but do not act disrespectfully.
- **Hostile / Adversarial** – describes an environment where lack of respect is shown to nurses or physicians. Leads to the development of frustration within one party due to their interaction with the other.

The second segment explores supportive physician behaviors and their impact on selected clinical and nursing outcomes. This segment has two sections – actual norms as experienced by RNs and perceived norms of RNs regarding their coworkers’ experiences.

The third segment explores more in depth the hostile / adversarial relationship type due to its impact on the healthcare system. In this section, disruptive physician behaviors are explored and their impact on selected clinical and nursing outcomes. The constructs assessed in this segment are related to those explored in segment two, but measure the opposite behavior. For example, in the second segment, the nurse was asked regarding ‘Physicians correct nurses in a supportive manner if they make a mistake’. In the third segment, they were asked “Physicians shout or yell at nurses if they make a mistake”. These were based on the Nursing Incivility Scale (NIS) constructs of disruptive behaviors [24]. Related sample items from the instrument are included in Table 1. The parameters of clinical and nursing outcomes were modeled on the study of Rosenstein and O’Daniel [4], related sample items are included in Table 2. Items to support these constructs were selected as they were prominently reported by RNs in the literature. Five point Likert scales were used as response type. Similar to the second segment, this segment has two sections, one each to evaluate the actual and perceived norms.
The instrument concludes with demographic questions. In the final instrument, these questions aim to explore the changes of behavioral norms from rural to urban setting or the changes in different type of healthcare activities. In this pilot study these questions were used to understand the educational and experience level of the student participants. Throughout the development phase, the principles of the tailored design method [25] for survey research were applied in order to avoid biasness or common mistakes in survey design.

Table 1: Sample question regarding disruptive behaviors

<table>
<thead>
<tr>
<th>In past 12 months, how many physicians in your workplace have exhibited the following behaviors toward you?</th>
<th>In your opinion, how would most other nurses respond regarding how many physicians exhibited the following behaviors toward nurses?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abusive behavior toward me.</td>
<td>Abusive behavior toward nurses.</td>
</tr>
<tr>
<td>Shouting or yelling at me if I make a mistake.</td>
<td>Shouting or yelling at nurses if they make a mistake.</td>
</tr>
<tr>
<td>Taking their feelings of anger, stress or frustration out on me.</td>
<td>Taking feelings of anger, stress, or frustration out on nurses.</td>
</tr>
<tr>
<td>Not responding to my concerns in a timely manner.</td>
<td>Not responding to nurses concerns in a timely manner.</td>
</tr>
</tbody>
</table>

Table 2: Sample questions regarding impact of disruptive behaviors

<table>
<thead>
<tr>
<th>If physicians displayed the behaviors listed above (Table 1), how did they impact you or your patient care?</th>
<th>If physicians displayed the behaviors listed above (Table 1), in your opinion, how would most other nurses respond regarding its impact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases delays in care.</td>
<td>Increases delays in care.</td>
</tr>
<tr>
<td>Increases incidence of medical errors.</td>
<td>Increases incidence of medical errors.</td>
</tr>
<tr>
<td>Increases my frustration.</td>
<td>Increases nurse’s frustration.</td>
</tr>
<tr>
<td>Decreases my job dissatisfaction.</td>
<td>Decreases job satisfaction of nurses.</td>
</tr>
<tr>
<td>Increases my intention to leave my job.</td>
<td>Increases nurse’s intention to leave their job.</td>
</tr>
</tbody>
</table>

In the full study, the RN instrument was then modified and converted to a second instrument for studying physicians’ norms. Both of the draft instruments were sent to a panel of experts for review of face validity and to obtain editorial feedback. The panel includes professors from Department of Industrial Engineering and College of Nursing who have extensive experience and expertise on survey design, nature of healthcare environment, and the nursing profession. The expert panel made comments on biasness, readability and applicability of the questions. This input lead to the further refinement of the draft instrument prior to deployment for the pilot study with nursing students at Montana State University (MSU).

4. Pilot Study

The primary objective of the pilot survey was to identify issues regarding interpretations or readability of the instrument before distributing to the full study population. A secondary objective of the pilot study was to explore the perceptions of nursing students regarding nurse-physician relationship culture and its impact on clinical/nursing outcomes and identify any changes that students undergo during their studies.

4.1 Sample Data and Demographic Information

The survey was delivered electronically via students’ email accounts to a total 498 nursing students including sophomore (second year), junior (second year) and senior (fourth year) classes. A total of 44 students responded to the survey (8.84%). Among them, 27 participants (61.63%) responded to all the questions and completed the survey. Table 3 summarizes the demographic information of the participants.
4.2 Findings

The pilot data was utilized to investigate any changes in the perceptions of nursing students as their college education progresses. This included all perceptions measured by the instrument related to the relationships between nurses and doctors based on both the experience of the student, what they think that practicing nurses would say, and the expected impact of the behaviors on incidents of medical error, job satisfaction and turnover.

4.2.1 Injunctive Norms of Nursing Students Regarding RN-MD Relationship Culture

Nursing students were questioned about their expectation (actual injunctive norms) of RN-MD relationship culture, including aspects of each of the five types of relationship categories defined previously. For example, students were asked about whether they thought the development of patient care plans should be a joint exercise between nurses and physicians. For each question, a null hypothesis was assumed that no differences in measured response would be found between any of the student groups. For example, students were asked about whether they thought the development of patient care plans should be a joint exercise between nurses and physicians. For each question, a null hypothesis was assumed that no differences in measured response would be found between any of the student groups. In general, the study failed to reject the null hypothesis, as few differences were found in any of the dimensions measured. The exceptions were student expectations about 1) the need for physicians to be available to support nurses, 2) the level of physician control when developing a care plan, and 3) the formality of nurse-physician relationships. While a significantly larger proportion of junior students had a higher expectation of physician availability and the formality of relationships than sophomore students ($\alpha = 0.1$), a significantly greater proportion of junior and senior students also expected a greater role in determining patient care plans than sophomore students, but these differences were not statistically significant. The pilot group was also separated by healthcare experience level instead of school year. In this analysis, a significantly ($\alpha = 0.1$) higher proportion of experienced students expected a more formal relationship between nurses and physicians, while all other measures found no significant differences.

4.2.2 Impact of Supportive Physician Behaviors

Several items on the questionnaire represented cooperative or supportive physician behavior toward RNs during both regular activities and stressing situations. The nursing students were asked about their experiences and how they perceive the correlation between those behaviors and different nursing and clinical outcomes. The responses were all similar (agree to strongly agree) among sophomore, junior and senior nursing students with a slight downward trend noted in two areas. In one example of this trend, the farther a student is in their degree program, the lower the proportion of the group who expected supportive physician behaviors to improve their feelings about their job. While this presented potentially interesting directional information, the differences were not statistically significant ($\alpha = 0.1$). The pilot group was also separated by experience level instead of class, and again no significant differences were found.

4.2.3 Impact of Disruptive Physician Behavior

As described in the instrument development section, the students were presented disruptive physician behaviors toward RNs and were asked about their perceptions regarding the link between those behaviors and adverse clinical and nursing outcomes. For example, students were asked if a physician were verbally abusive toward a nurse, would it impact the incidence of medical errors. The responses by group were similar for all the questions and no significant differences were observed in the response of sophomore, junior or senior nursing students.
4.2.4 Nursing Student Perception on the Impact of Physician Behavior on RN Satisfaction

Nursing students were asked how satisfied they think most practicing RNs were about their overall relationship with physicians. Changes were observed among the responses of sophomore to senior students. Most sophomore students perceived that most RNs are ‘satisfied’ to ‘very satisfied’. However, responses changed into ‘satisfied’ to ‘Neutral’ from sophomore to junior and then senior students. The largest observable difference was with regard to student’s perception of overall nurses’ satisfaction. A clear downward trend was visible with 66% of sophomores agreeing or strongly agreeing that nurses were satisfied with their jobs, while only 45% of juniors and 33% of seniors felt the same way. Despite the visible trend, these differences were not statistically significant ($\alpha = 0.1$).

4.2.5 Comparison of Descriptive and Injunctive Norms of Relationship Culture

Nursing students were asked about their perception of nurse-physician relationship culture (descriptive norms) and their expectations of desired RN-MD relationship culture (injunctive norms). The responses were analyzed to understand if there are differences between the perception of how students believe physicians and nurses act in the workplace (the descriptive norms) and how they believe physicians and nurses should act to create a desirable workplace (the injunctive norms). This analysis found significant differences ($\alpha = 0.1$) in all questions using two sample t-tests. This means that the nursing students surveyed have a belief that actual behaviors in the workplace are not meeting the threshold of desirable behavior in any of the five relationship types measured by the instrument. Table 4 shows the results of these comparisons.

<table>
<thead>
<tr>
<th>Questions</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians are willing to explain issues regarding patient care to nurses.</td>
<td>0.00</td>
</tr>
<tr>
<td>Nurses can influence physician’s decisions on patient care plans</td>
<td>0.00</td>
</tr>
<tr>
<td>Physicians provide nurses appropriate authority with regard to patient care.</td>
<td>0.00</td>
</tr>
<tr>
<td>Physicians and nurses discuss and develop patient care plans together.</td>
<td>0.00</td>
</tr>
<tr>
<td>Physicians are readily available to assist nurses with patient care.</td>
<td>0.00</td>
</tr>
<tr>
<td>Nurses feel that physicians are always in charge when deciding a plan of care.</td>
<td>0.005</td>
</tr>
<tr>
<td>Nurses are frustrated by their interactions with physicians.</td>
<td>0.00</td>
</tr>
<tr>
<td>Physicians act in a domineering way toward nurses.</td>
<td>0.00</td>
</tr>
<tr>
<td>Nurse’s interactions with physicians are formal (i.e. structured).</td>
<td>0.021</td>
</tr>
<tr>
<td>Physicians expect nurse’s role is mostly to answer their questions about patients.</td>
<td>0.00</td>
</tr>
</tbody>
</table>

4.3 Study Implications

The pilot study provided the expected refinement and initial validation of the draft instrument. This proved valuable in moving forward with the full study of practicing nurses and physicians currently underway. The pilot also provided some insights into the perceptions and beliefs of nursing students, notably a significant difference in the proportion of students expecting high levels of physician availability and formal relationships based on undergraduate year was found.

The most telling finding from the pilot study is that a significant difference exists between what nursing students expect to happen in the workplace with regard to nurse-physician relationships and what they think should happen in a desirable workplace. In some ways, this difference is healthy, as it shows that nursing students are proceeding into their profession with eyes wide open and realistic expectations. In other ways, this difference is concerning because it may reflect students being biased by horror stories from practicing nurses, media reports and other outlets. Further study should be completed to investigate the reasons for these differences, and to see if a larger study would find additional significant differences where trends were visible in this small data set.

5. Study Limitations

The ability to draw any wide-reaching conclusions about the perceptions and beliefs of nursing students is severely limited by the size of the pilot study. While the survey was sent to 498 students of College of Nursing (CON) at
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MSU, only 27 students fully completed the instrument (5.42% response rate). This small sample limited the ability of the researchers to perform a great deal of meaningful statistical analysis (for instance, proportions could not be compared using normal approximations). In addition, 44% of the respondents had some sort of work experiences in healthcare, including 11% who had worked as Certified Nursing Assistants. This means that any evidence found of the perceptions or beliefs of students changing with education level might also be confounded with experience in this group. While steps were taken in the analysis to investigate these two factors separately, and few differences were found based on experience level, the concern remains since the potential for interactions between experience and education level could not be investigated.

6. Conclusion and Future Work
The purpose of this pilot study was twofold. First it provided initial validation to the draft instrument. Second it explored the differences in nursing students’ perception about the nature of nurse-physician work relationship over the period of college education. Changes in the actual injunctive norms of collegial and formal (structured) relationship type were observed from the percentage of responses as education continues (i.e. among sophomore, junior and senior students) with a few statistically significant differences ($\alpha = 0.10$).

Strong statistically significant differences were found between actual descriptive norms and actual injunctive norms of nursing students regarding all the elements of RN-MD relationship. This indicates a gap between nursing students’ perception of RN-MD work relationship type and their expected nature of desirable relationship culture. These findings serve as support for the ongoing study of practicing nurses and physicians and as impetus for more in depth exploration of when, where, and how gaps in descriptive and injunctive norms exist, both at different stages of an individual nurses’ career and among health care professionals. Further exploration should not be limited to only practicing professionals, but also include those enrolled in educational programs to prepare them for these professions.

Identification of persistent gaps in descriptive and injunctive norms has implications not only for how nurses and other health care professionals are educated and socialized into their respective roles, but also for the development of interventions that may effectively bridge these gaps and improve workplace cultures. Based on the experiences of other industries, it is anticipated that differences in descriptive and injunctive norms can be leveraged to create positive changes in healthcare culture and with those changes improve the efficiency and effectiveness of healthcare delivery.

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