

# An Integrative review: Nurse-Physician Collaboration and Patient Outcome

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## 1. Introduction

### 1.1. Abstract

There is significant evidence supporting the inverse relationship of nurse-physician collaboration to patient outcomes. Through an extensive review of current literature and recent studies from 2013-2018, our research explores the collaboration between nurse and physician and patient outcomes in critically ill adults. Communication in the nurse-physician realm has yet to be fully understood. This is significant for nursing because nurses not only serve as an advocate for the patient but also collaborate very closely with the physician. The results predominantly indicate that collaboration has an influence on hospital acquired infections (ventilator associated pneumonia, central line associated bloodstream infections, and pressure ulcers), length of stay and medications errors. The evidence is present that as communication improves, patient outcomes improve as well.

**Keywords:** Critical Care; Healthy Work Environment; Infections; Physician Collaboration; Patient Outcome; Patient Safety.

## 2. Background

With 98,000 hospitalized patients dying each year in the United States resulting from medical errors it is imperative we examine and correct the contributing factors (Manojovich & DeCicco, 2018). Nosocomial pneumonia is the leading cause of mortality due to hospital acquired infections and pressure ulcers can increase hospital stays by 63% [1]. According to the Nursing Role Effectiveness Model the practice environment and communication with physicians play a role in patient outcomes. In fact, this has been suggested as the most determining factor responsible for excess hospital mortality (Manojovich & DeCicco, 2018).

Not only is the cost of healthcare associated infections enormous, Ventilator Associated Pneumonia [VAP] contributes to 35,967 deaths per year while central line Catheter Associated

Bloodstream Infections [CLABSIs] are responsible for 30,665 deaths per year and nurse physician collaboration has been shown to be significantly related to this. One study found these results related to this inverse relationship of nurse-physician collaboration to patient outcomes; for every 0.5 increase in collaboration, bloodstream infections decreased by 2.98 and that of pneumonia by 1.13 [both with a significance of p being .005] [2]. Communication failures have been found to be at the root of over 60% of sentinel events [3].

Looking at this partnership, there are several issues. When surveyed, nurses and physicians had different beliefs pertaining to responsibility, barriers, and possible solutions [1]. This partnership is further affected by views as nurses tend to see collaboration as something more positive while physicians tend to be more optimistic in how they rate the quality of collaboration. Physicians also do not seem to fully understand the nursing role. This makes solving this situation difficult as both parties have differing ideas of aspects making up the problem. Research suggests implementation of certain measures such as mandatory multidisciplinary patient rounds, and interprofessional communication can improve overall patient outcomes [2]. It is important to support improvement measures like this. Communication in the nurse-physician realm has yet to be fully understood. To get more insight into the issue, it is important to consider the following statement, inadequate nurse physician collaboration is associated with poor patient outcomes in critically ill adults.

### **3. Critique**

#### **3.1. The Impact of Nurse/Physician Collaboration on Patient Length of Stay**

The article the impact of nurse/physician collaboration on patient length of stay used a cross sectional, non-experimental design to identify the relationship between nurses' perceptions of nurse/physician collaboration and patient's length of stay [4]. According to the authors, the nurse's perceptions of greater nurse/physician collaboration would be associated with a decrease in actual length of stay and patients would be discharged sooner than expected [4]. Current research has identified a decrease in length of stay by 2 days and a cost reduction of \$5,000 dollars when care was provided collaboratively by physicians and nurse practitioner (Meyer & Miers, 2005). The patient's length of stay was calculated as the actual days the patient was admitted to the unit. The deviation from expected length of stay was calculated as the actual days on the unit minus the expected days on the unit. The expected days of each patient was predicted using diagnostic related groups, which was developed to define hospital case mix by grouping patients with similar clinical attributes. Angust et al. (1996) found that four individual attributes accounted for 80% of the variance identified in Length of Stay. These include diagnosis, number of comorbid illnesses, admission type and discharge status. Diagnostic Related Groups consider three of the four attributes identified in the Angust study as being predictive of the patient's length of stay (1996).

The findings of the study did not support the hypothesis. It was hypothesized that greater perceptions of nurse-physician collaboration would be associated with lower actual length of stay. Contradictory to what was hypothesized, nurse-physician collaboration was associated with an actual increase in length of stay. These patients seem to have more complicated care, requiring more collaboration between nurses and physicians. Therefore, the increase length of stay may be due to the result of caring for older, more acutely ill patients. The findings did not support the second hypothesis. Specifically, it was hypothesized that greater perceptions of nurse-physician collaboration would be associated with a shorter length of stay than expected.

In fact, the finding of the study found the patients were on the unit a lot longer than expected. Originally, it was believed that nurse-physician interaction would result in more timely interventions, however, when care is resolved collaboratively by nurses and physicians, it is possible for earlier detection of potential complications. If these complications are not detected in time, it may result in re-admission to the hospital. Given these findings, nurse-physician collaboration may result in longer length of stay but could prevent complications that may otherwise go untreated. Collaboration between nurses and physicians may help identify complications that may result in an extra day in the hospital (longer stay than expected), but if this is not identified, it may result in a negative outcome for patients and a greater financial burden.

The findings of the article the impact of nurse/physician collaboration on patient length of stay by **Tschannen & Kalisch (2013)** found collaboratively determined care, may result in longer length of stay, but could prevent complications that may otherwise go untreated. Collaboration between nurses and physicians may foster earlier detection of complications that may result in an extra day in the hospital (longer stay than expected), but if not identified, would have resulted in a negative outcome for patients and a greater financial burden. Discharging patients early may result in higher readmission rates. Sampling limitations of the study affect the generalizability; further research is needed for generalizing beyond sampling frame (similar medical/surgical acute care units with similar nursing and patients' characteristics) Inclusions of short stays among the patients was a limitation of the study. Sixty-five patients (21%) had a length of stay of less than 1 day. Current research has provided evidence that collaborative relations among nurses and physicians result in improved patient outcomes and less fragmentation (gaps) of care.

### **3.2. Healthy Work Environment, Nurse-Physician Communication and Patient Outcomes**

The article *Healthy Work Environment, Nurse-Physician Communication and Patient Outcomes* used a non-experimental, descriptive survey design to examine the relationship between nurses' perceptions of their practice environment, nurse physician communication and selected patient outcomes (Ventilator Associated Pneumonia, catheter associated sepsis, and medication error). Previous literature suggests communication between nurses and physicians is the single factor most significantly associated with excess hospital mortality [5]. In more recent research, verbal miscommunication between nurses and physicians was responsible for 37% of all errors [5]. However, this study focused on factors in the ICU work environment such as work empowerment and magnet hospital characteristics versus factors in the work environment [6]. Workplace empowerment refers to three domains; opportunity, information and support. Magnet hospital characteristics consistent of key domain that support professional nursing practice such as nurse participation, nursing foundations for quality care, nurse manager ability, leadership and support of nurses [6].

The study found both the workplace empowerment and the practice environment scales were significantly related to the communication scale, which suggests a relationship between work environment factors and communication with physicians exist [6]. Because there is a link between factors in the work environment and communication among nurse and physicians provides the researchers with insight to improve nurse's recognition among the physicians [6]. The literature suggests providing nurses with more information, support, resources and opportunities at the hospital will improve the communication with physicians [6]. The

researchers also suggest using a professional nursing model to deliver patient care on a unit, and adequate staffing will improve nurse-physician communication [6]. The researchers mentioned several limitations among their study. Because the authors used a self-rating scale, they introduced potential bias and perhaps an overestimation of outcomes [6]. Since the study used a cross sectional design, they were unable to track the process of nurse physician communication over time [6]. Unfortunately, the cross-sectional design also limits the ability to establish cause and effect relationship.

### **3.3. Nurse-Physician Collaboration and Hospital-Acquired Infections in Critical Care**

The researchers conducted a longitudinal study to examine the relationship between nurse-physician collaboration and Health Care-Associated Infections (HAIs) in critically ill adults. The study hypothesized that nurse-physician collaboration is inversely related to VAP and CLABSI. Nurse-physician collaboration is defined as “nurses and physicians working together, sharing responsibilities for solving problems and making decisions to formulate and carry out plans for patient care” [2]. According to the study, the two most common HAIs are Ventilator-Associated Pneumonia (VAP) and Central Line Associated Bloodstream Infections (CLABSIs), which together estimate up to 66,000 deaths per year [2]. A total of 671 nurse perception surveys were collected from four specialized ICUs in western New York, each containing 10 to 22 beds. Patient outcome data that included VAP and CLABSI were obtained from the ICU clinical outcome specialist. Nurse-physician collaboration was measured by using the Collaboration and Satisfaction About Care Decisions (CSACD), which is both reliable and valid.

The researchers conducted several statistical tests to strengthen the validity of the study such as: mixed linear modeling to examine the potential relationship between nurse-physician collaboration and HAI's; the intraclass correlation coefficient was calculated to determine the degree to which observations within groups may be dependent because of nesting; multilevel modeling was used to control for variability; and bias-corrected bootstrap methods were also used to generate 95% CI's and P values for model parameters [2].

The study results showed that units with better nurse-physician collaboration were associated with lower rates of both VAP and CLABSI [2]. Some strengths expressed in the study were the fact that the longitudinal data collected allowed them to examine trends over time, which improves the validity of the findings, and controlling for nesting in the data analysis decreased room for error [2]. Limitations included, lack of generalizability, only nurses' perceptions related to nurse-physician collaboration were included, and they did not include physician staffing in models [2].

The implication of the findings was to improve patient safety through improved collaboration and communication. The study suggested implementing the following interventions, multidisciplinary daily patient rounds and inter-professional education to successfully improve patient outcome [2].

Overall, the study results were valid regardless of the study limitations. The studies suggestions for implementations apply to clinical practice today and would be feasible. Like suggested, implementing daily patient rounds would be practical for all parties involved in the patient's care.

### 3.4. Intensive Care Units, Communication between Nurses and Physicians, and Patients' Outcomes

The researchers conducted a cross-sectional survey study to determine the relationships between patients' outcomes and nurses' perceptions of elements of communication between nurses and physicians and characteristics of the practice environment. The study hypothesized that hospital environments with empowering social structures are linked to better nursing outcomes. Workplace empowerment is defined as 4 social structures, opportunity, information, support and resources [1]. According to the study, nosocomial pneumonia is the leading cause of mortality due to hospital-acquired infections, and hospital stays increase by 63% for patients with pressure ulcers [1].

A total of 462 nurses were anonymously surveyed and completed the Intensive Care Unit Nurse-Physician Questionnaire. To participate in the study, nurses had to work part time or full time, have completed their orientation period, and spend at least 50% of their time as staff nurses [1]. A convenience sample of 25 ICU's from several major healthcare organizations in Southeast Michigan was utilized. Patient outcome data that included Ventilator Associated Pneumonia (VAP), Bloodstream Infection associated with a central catheter (BSI) and pressure ulcers were obtained from administrative databases for a 5-month period [1]. A total of 1090 patients' charts were randomly sampled. The instruments used to test all four variables, workplace empowerment, magnet-hospital properties, communication between nurses and physicians and patients' outcome, were reliable and valid according to the Cronbach alpha test.

The researchers conducted several statistical tests to strengthen the validity of the study such as: Pearson correlations to estimate associations between pair of predictors; multiple regression to estimate models when significant correlations were found; data aggregation for adequate group representation; correlation matrix to assess the relationship between nurses' perceptions of communication between nurses and physicians and patient outcomes; and multiple regression models to test possible predictors of the 3 outcomes [1].

The study results showed that nurses' perceptions of communication between nurses and physicians taken were not related to adverse outcomes, but the relationship between timeliness of communication and pressure ulcers was significant [1]. Timeliness is defined as the degree to which nurses believe that information about patient care is relayed promptly to physicians [1]. The strengths of the study were all the statistical tests performed to ensure the study was reliable and valid. Limitations included: lack of generalizability; small sample size led to the possibility of a type II error; due to the cross-sectional design, cause-and-effect statements could not be made; and the low internal consistency of the timeliness subscale may have adversely affected the results [1].

The study suggests using the 5-step process known as STICC (Situation, Task, Intent, Concern, Calibrate) to improve communication and avoid failures. According to the study, STICC leads to sense making between communicators because it requires feedback, which other communication tools such as the SBAR lack [1]. The STICC protocol allows nurses to be better heard, resulting in improved outcomes for patients through more effective communication [1].

Although, the study's hypothesis was not supported, the findings support further research such as the significant influences of communication on pressure ulcers. Timeliness of

communication on pressure ulcers may result in better outcomes; therefore, reporting of pressure ulcers should be done in a timely manner to improve patient outcome.

### **3.5. Nurse-Physician Communication in the Long-Term Care Setting: Perceived Barriers and Impact on Patient Safety**

The researchers conducted a mixed-method study to describe nurses' perceptions of nurse-physician communication in the Long-Term Care (LTC) setting. Specifically, the telephone communication, which occurs very often in the LTC setting. According to the study, the Institute of Medicine's report "To Err is Human" underscores the role of ineffective communication as a significant contributing factor in medical error, with communication failures at the root of over 60% of sentinel events reported to the Joint Commission [3].

A total of 375 nurses completed a questionnaire adapted from the Schmidt nursing home quality of nurse-physician communication scale used in Sweden, which was sent to all eligible nurses via the staff development nurse or nursing supervisor at each facility. The questionnaire included a coffee gift certificate as an incentive, and to increase the response rate, a second batch of questionnaires were distributed within each facility to nurses who self-reported non-response to the first request [3]. To participate in the study, nurses had to provide more than 8 hours of direct patient care per month [3]. For the qualitative data collection, 21 nurses (10 randomly sampled and 11 selectively sampled) were telephone interviewed in which a trained interviewer asked a series of questions [3].

The researchers conducted several statistical tests to strengthen the validity of the study such as: sensitivity analysis that stratified item responses to assess the effect of the response rate on the summary results of the item responses; and Chi-square test to assess for statistically significant differences in each item response by facility response rate [3]. To strengthen the validity of the qualitative data the researchers did the following: tape recorded and transcribed the interviews and then extracted major themes; each investigator read the transcripts and compared the themes with the proposed framework; all the authors met to discuss and revise the framework; each transcript was re-read by 2 authors and coded comments using the revised framework; and the study was reviewed and approved by the Institutional Review Board of the University of Massachusetts Medical School [3].

The study results showed several barriers to effective nurse-physician communication. Feeling hurried by the physician was the most frequent barrier (28%), followed by finding a quiet place to call (25%) and difficulty reaching the physician (21%) [3]. Out of the of qualitative interviews, the results showed that nurses needed to be brief and prepared with relevant clinical information when communicating with physicians and that physicians needed to be more open to listening [3]. The strengths of the study were all the statistical tests and quality-enhancement strategies performed to ensure the study was reliable and valid. The mixed-method approach allowed for meaningful inferences resulting from the integration and comparison of the result from each part of the study [3]. Limitations included: lack of generalizability; physicians were not included in the study, thus limiting conclusions; and they did not report the reliability of the questionnaire items.

The study suggests that improving nurse preparedness is key to improving nurse-physician communication, but it is also important to improve the physicians' attitudes, professionalism and responsiveness to achieve a greater outcome [3]. According to the study tools such as the

American Medical Director Association “Protocols for Physician Notification” and SBAR are essential to improving clinical communication [3].

Overall, the study results were valid regardless of the study limitations. The studies suggestions for implementations apply to clinical practice today and would be feasible. Like suggested, nurse preparedness is essential to relaying important information to the physician, but it is also important for the physician to be available when needed in case of emergencies. A collaborative approach would ultimately lead to improved nurse-physician communication and overall better patient outcomes.

#### **4. Summary of the Literature Review**

This group of studies analyzed the effect of nurse-physician communication on patient outcome. The results predominantly indicate that collaboration has an influence on hospital acquired infections (ventilator associated pneumonia, central line associated bloodstream infections and pressure ulcers), length of stay and medications errors. The evidence is present that as communication improves, patient outcomes improve as well. Furthermore, these studies also sought to identify the barriers to effective communication. It was found that barriers to adequate collaboration are comprised of timeliness of communication, inadequate nurse preparedness, and lack of professionalism.

Strengths identified throughout the studies correlated with the study design. One study suggested that a longitudinal approach allowed examining trends over time, which improved the validity of the findings. Another study mentioned a mixed-method approach allowed to develop a communication framework highlighting the inter-relatedness of each stage of nurse-physician communication and its susceptibility to breakdown at any stage. All the studies mentioned that their findings have provided more documentation on how nurse-physician communication continues to be an important issue. The following limitations were identified for most of the studies: lack of generalizability, physicians were not included in the surveys, and limited ability to establish cause-and-effect relationships. Overall, this research endorses the theory that improving nurse-physician communication will improve patient outcome.

#### **5. Recommendations**

Through the analysis of various studies, this paper sought to examine the relationship of nurse-physician collaboration and patient outcome in critically ill adults. Thus, recommendations were developed to enhance collaboration and improve patient outcome. Common themes identified were that of a lack of professionalism, preparedness, and responsiveness being contributing factors in effective communication. To enhance collaboration, the quality of conversations among healthcare staff must improve by maintaining a professional demeanor and mutual respect. When nurses are prepared with adequate information on the patient a trust is formed between nurse and physician which will ultimately improve communication. Additionally, being clear about the patient’s needs and responding in a timely manner contributes positively to their overall health. Moreover, nurses can contribute to effective communication by addressing issues while the physician is on the unit/facility and triaging calls made to the physician. Lastly, aspects associated with work empowerment (opportunity, information and support) provide nurses with the necessary tools to facilitate effective collaboration. Nurse-physician communication can be improved through the implementation of interprofessional education, a goals worksheet and nurses rounding with physicians.

To implement these recommendations, a variety of options have been suggested. As previously mentioned, these include the nurse attending rounds with the physician, interprofessional education via educational programs and patient simulations, and integrating the use of a daily standardized goals worksheet to be completed collaboratively. Allowing a patient's primary nurse to attend rounds with the physician can significantly improve patient outcomes. The primary nurse serves as an advocate for the patient in providing clarification for any of the patient's questions while also updating the physician on any changes in status. Through this collaboration, the patient can voice their opinions, participate in their treatment plan and facilitate effective nurse-physician communication. Interprofessional education via educational programs such as faculty development provides all healthcare professionals with the knowledge and skill to work collaboratively. Additionally, patient simulations with nurses and residents promotes interprofessional collaboration and critical thinking. Lastly, the use of a goal's worksheet allows nurses and physicians to collaborate and provide clarification on expectations while improving patient outcome. To understand this phenomenon more clearly and establish the appropriate measures, further research must be conducted. This research should aim to include various units and institutions and examine the physician's perceptions as well. Hence, questions for further research have been developed based on gaps found in the literature. These questions include: Do physicians' perspectives on collaboration affect patient outcomes in critically ill patients? Does the integration of a collaboratively filled goals worksheet improve patient outcome in the long-term care setting? Does the integration of nurses in physician rounds improve patient outcome in critically ill patients? Ultimately, further research will aid in the improvement of patient outcome.

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