Linking the Practice Environment to Nurses' Job Satisfaction Through Nurse-Physician Communication

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Purpose: *To investigate direct and indirect relationships among the practice environment, nurse-physician (RN-MD) communication, and job satisfaction, as is posited in the nursing role effectiveness model (NREM).*

Design: *Survey.*

Methods: *Surveys were sent to a random sample of 500 hospital nurses throughout Michigan, and 332 (66%) responded. Main study instruments were the Conditions for Work Effectiveness Questionnaire-II (CWEQ-II), the Practice Environment Scale of the Nursing Work Index (PES-NWI), the ICU Nurse-Physician Questionnaire, and the Index of Work Satisfaction (IWS), Part B. Inferential statistical tests included multiple regression, t tests, and one-way analysis of variance.*

Findings: *Practice environment (PES-NWI) and empowerment (CWEQ-II) scales explained 20% of the variance in RN-MD communication. The combination of both environment scales (PES-NWI and CWEQ-II) and RN-MD communication explained 61% of the variance in nursing job satisfaction scores. RN-MD communication was also a significant mediating variable in the relationship between structure (practice environment and empowerment scales) and outcome (nursing job satisfaction).*

Conclusions: *Factors in the practice environment contributed both directly to nursing job satisfaction and also indirectly through RN-MD communication. Study findings showed that a practice environment favorable to nurses improved both nurses' perceptions of their communications with physicians and their job satisfaction.*

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[Key words: practice environment, nurse-physician communication, nursing job satisfaction]

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Although researchers have been investigating predictors of nurses' job satisfaction for over 60 years, a recent study showed that for many nurses job satisfaction is still elusive (Ma, Samuels, & Alexander, 2003). Improving the practice environment for nurses might be one strategy to promote job satisfaction (Manojlovich & Laschinger, 2002), and the practice environment might have a stronger relationship to job satisfaction than to personal variables such as age, experience, and length of tenure in an organization (Irvine & Evans, 1995). The nursing processes in which nurses engage also affect their satisfaction at work (Blegen, 1993). Yet, how processes in the practice environment are related to outcomes such as job satisfaction is poorly understood.

Communication is one process that has been associated with job satisfaction (Blegen, 1993). Nurses and physicians together make up the largest component of healthcare providers (Keenan, Cooke, & Hillis, 1998), and communication styles between nurses and physicians, viewed from the perspective of nurses only, have been shown to contribute to nurses' job satisfaction (Coeling & Cukr, 2000). The contribution of each group to the overall effectiveness of communication has not been established (Rosenstein, 2002). Nurses' roles in nurse-physician (RN-MD) communication warrants investigation as a process that affects job satisfaction. The Nursing Role Effectiveness Model (NREM) indicates both direct and indirect relationships between the practice environment, RN-MD communication, and nurses'

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job satisfaction (Irvine, Sidani, & McGillis Hall, 1998), providing an excellent framework for examining these research questions:

1 What is the relationship of the hospital environment and nursing characteristics to nurses' job satisfaction?
2 What is the relationship of RN-MD communication to nurses' job satisfaction?
3 Does RN-MD communication mediate the relationship between the hospital practice environment and nurses' job satisfaction?

Background

Researchers have identified several nurse characteristics, such as age, sex, education, experience, and tenure that influenced job satisfaction (Hinshaw & Atwood, 1983). However, nurse characteristics, such as level of nursing education, have not always been consistently linked to RN-MD communication (Mitchell, Armstrong, Simpson, & Lentz, 1989; Hampton & Hampton, 2000). Hospital work environments have commonly been conceptualized by nurses from the perspective of magnet hospital properties (Aiken, Sochalski, & Lake, 1997), and from the perspective of structural empowerment (Laschinger, 1996). Structural empowerment refers to four social structures: opportunity, information, support, and resources embedded in any work environment that, when accessed, are sources of power. Extensive research from both perspectives has shown a link between nursing working conditions and nursing outcomes (Aiken, Clarke, Sloan, Sochalski, & Silber, 2002; Laschinger, Finegan, Shamian, & Wilk, 2001; Manojlovich & Laschinger, 2002). However, neither conceptualization of the practice environment has yet been empirically linked to communication. Hospital characteristics also constitute the work environment, and attributes such as size, location, and teaching status have been associated with RN-MD communication (Shortell et al., 1994). These factors are known to influence outcomes, but they are often ignored in nursing research (Mark & Burleson, 1995).

In the classic study of intensive care unit (ICU) outcomes, hospitals characterized by good communication between nurses and physicians had lower-than-expected mortality rates, while those with poor communication had significantly higher-than-expected mortality rates (Knaus, Draper, Wagner, & Zimmerman, 1986). Although nursing job satisfaction as an outcome was not studied, the results implied a link between RN-MD communication and outcomes. Doran et al. (2001) found that communication between nurses and physicians, as evaluated by nurses only, mediated the effect of selected structural variables on patients' therapeutic self-care ability. However, they did not consider the effect of the hospital environment on nursing activities, nor did they include nursing job satisfaction in their investigation. When physicians and nurses were surveyed together, the groups differed in their beliefs about responsibility, barriers to progress, and possible solutions to the problem, although both groups agreed that a direct link exists between disruptive physician behavior and nurses' dissatisfaction (Rosenstein, 2002).

This study was focused on RN-MD communication as a process that can affect nurses' job satisfaction, in the context of the hospital environment. An assumption of this study was that nurses' perceptions indicate their reality, because people are influenced by their perceptions of the environment, and not by some objective measure of reality (Spreitzer, 1996).

The nursing role effectiveness model (NREM) is a conceptual model based on Donabedian's structure-process-outcome model of quality care (Donabedian, 1980). According to the NREM, patient, nurse, and organizational structural variables influence both nursing roles (which are process variables) and outcome variables. Nursing roles, in turn, further influence outcomes (Irvine et al., 1998). For this study, only a few propositions in the NREM were tested to explain how nurses' perceptions of RN-MD communication are affected by the work environment, and in turn affect nursing job satisfaction. According to this model, nurse characteristics and the organizational work environment for nurses directly affect both nurses' perceptions of the effectiveness of RN-MD communication and nurses' job satisfaction. In addition, nurse characteristics and the organizational work environment for nurses indirectly affect nurses' job satisfaction through RN-MD communication. Nurses' perceptions of the effectiveness of RN-MD communication also directly affect nursing job satisfaction.

Methods

Design and Sample

This study had a nonexperimental survey design. The Michigan Nurses Association (MNA) provided a list of acute care nurses, from which a random sample of 500 nurses was drawn. In an earlier study members of the MNA were also sampled, but a different list was used to generate a separate sample of medical-surgical nurses (Manojlovich, 2005). To be included in the current study, nurses had to be currently employed, hospital based, and either in a staff nurse role or in contact with patients regularly (e.g., patient educator, clinician).

Variables and Instruments

Nurse characteristics. Information was gathered on the following nurse characteristics via a researcher-designed demographic questionnaire: age, sex, ethnicity, educational level, years of experience, years in current institution, status (full-time, part-time, or contingent), and type of position.

Organizational work environment. The organizational work environment was assessed in three ways. First, the Conditions for Work Effectiveness Questionnaire-II (CWEQ-II) was used to measure sources of power, also known as structural empowerment. Second, the Practice Environment Scale of the Nursing Work Index (PES-NWI) indicated nurses' perceptions of various factors in their work

environments. In addition to these two scales, information on organizational characteristics (e.g., hospital size, location, and teaching status) was collected with the demographic questionnaire, as a third measure of the organizational work environment.

The CWEQ-II is a six-subscale, 21-item measure of Kanter's concept of empowerment (Laschinger et al., 2001). The six subscales are: Opportunity, Information, Support, Resources, the Job Activities Scale II (JAS-II), and the Organizational Relationships Scale II (ORS-II). Items are scored on a 5-point Likert-type scale. A total empowerment score is created by summing the scores on the six subscales (range: 6–30; Laschinger, 2002). The first four subscales consist of 12 items (three for each of Kanter's [1993] four empowerment structures), and have shown high internal consistency (Laschinger, Almost, & Tuer-Hodes, 2003). Content and construct validity of the CWEQ-II have both been established (Laschinger et al., 2001). Only total scores are reported here, and for this study, Cronbach's alpha coefficient for the total score was .90.

The PES-NWI contains 31 items in a 4-point Likert-type scale. The five subscales indicate key domains in the hospital environment that support professional nursing practice: nurse participation in hospital affairs; nursing foundations for quality care; nurse manager ability, leadership and support of nurses; staffing and resource adequacy; and collegial nurse-physician relations (Lake, 2002). Subscale internal consistency coefficients have ranged from .71 to .84, with an overall Cronbach's alpha coefficient reported as .82 (Lake). Construct validity has been established, and confirmatory factor analysis supported the five subscale structure of the tool. The collegial nurse-physician subscale was removed from primary analysis to avoid multicollinearity between it and the tool used to measure RN-MD communication. Cronbach's alpha coefficient for this study was .93.

Organizational characteristics. Participants were asked to provide information about hospital size, type (teaching, community, or religious affiliation), and location (urban or rural).

Nurse-physician communication. RN-MD communication was measured by a portion of the ICU Nurse-Physician Questionnaire (Shortell, Rousseau, Gillies, Devers, & Simons, 1991). The overall questionnaire consists of 47 scales to measure multiple variables affecting relations between nurses and physicians. For this study, only the scales focused on between-group communication were used: openness (four items), accuracy (five items), timeliness (four items), and nurses' understanding of the communication that occurs between nurses and physicians (eight items). Also included was a single-item measure of nurses' overall satisfaction with communication between nurses and physicians, for a total of 22 items. Although designed for use in ICU environments, the tool has been recommended by its authors as being appropriate for use in other settings, and it was used in a recent study of medical-surgical nurses (Doran, Sidani, Keatings, & Doidge, 2002). Cronbach alpha coefficients ranging from .64 to .88 have been reported (Shortell et al., 1991; Doran et al., 2001; Doran et al., 2002). Convergent and discriminant validity were assessed through factor analysis (Shortell et al., 1991). Only the total communication scale scores are reported here, and for this study Cronbach's alpha coefficient was .93.

Nursing job satisfaction. Nursing job satisfaction was measured with the Index of Work Satisfaction (IWS), the most widely used measure of nursing job satisfaction (McGillis Hall, 2002). Part B, which was used in this study, consists of 41 items in seven subscales. Subscales indicate nurses' satisfaction with autonomy, pay, professional status, interaction with nurses, interaction with physicians, task requirements, and organizational policies (Stamps, 1997). The IWS is a 7-point Likert-type scale. Researchers using the IWS have reported subscale Cronbach alpha coefficients ranging from .35 to .90, and total scale reliability of .82 to .90 (McGillis Hall, 2002). Content validity (Kovner, Hendrickson, Knickman, & Finkler, 1994) and construct validity through factor analysis (Stamps, 1997) have both been established. The interaction with physicians subscale was removed for primary analysis because items were too similar to items in the RN-MD communication tool, and resulting multicollinearity may have made evaluation of study findings problematic (Munro, 2001). For this study, Cronbach's alpha was .92.

Procedures

The Tailored Design Method by Dillman was adapted in an effort to increase response rates above the typical 20% to 30% response rate of most surveys (Dillman, 2000). A total of three contacts were made. The ordering of instruments in each packet was varied to decrease the likelihood of consistency artifact, often seen in self-report research (Podsakoff & Organ, 1986). Only contact through the mail was made to maintain subjects' anonymity and privacy. The institutional review board at the investigator's home institution granted approval to conduct the study.

Data Analysis

Data analysis was conducted using the SPSS statistical software program. Descriptive statistics were used to describe characteristics of the sample, as well as dependent and independent study variables. A correlation matrix was generated to show associations between variables. Cronbach's alpha, as a measure of internal consistency, was used to measure and report reliability of all instruments used in this study. Inferential statistical tests included multiple regression, *t* tests, and one-way analysis of variance (ANOVA). The level of significance chosen for this study was .05.

Findings

A total of 332 surveys were returned from the original 500 packets that were mailed (66.4% response rate). Of the 332 respondants, 316 provided usable surveys and demographic information. However, to achieve as homogeneous

a sample as possible, only nurses who identified themselves as staff nurses or having roles involving patient contact (i.e., patient educator, clinician) were included in the sample. All cases with missing data were also excluded, so that the final sample for data analysis consisted of 284 staff nurses who worked in hospitals.

Participants ranged in age from 23 to 63 years (M=42.9), had an average of 17 years' experience in nursing, and had spent an average of 13 years in their current institutions, and on average over 8 years in their positions. Most were female (n=270, 95%) and Caucasian (n=258, 91.1%). They were educated at the associate (n=118, 41%), baccalaureate (n=111, 39.1%), diploma (n=30, 10.4%), or master's (n=24, 9.1%) levels. The majority worked full-time (n=187, 66.2%).

Before inferential tests, histograms and scatter plots were generated to ascertain that data were normally distributed. A correlation matrix using Pearson's r was calculated as a screening tool to test for associations between all variables of interest, except for hospital location because it was a dichotomous variable. Kendall's Tau was calculated for the relationship between hospital location and communication scores. Of the nurse characteristic variables, only years of work experience in nursing was significantly correlated with scores on the RN-MD communication scale (r=.13, p<.04) and with job satisfaction (r=.12, p<.05). Of the hospital characteristic variables, only hospital location was associated with communication scores (r=.13, p=.01). Associations between each of the environment scales (PES-NWI and CWEQ-II) and communication scores were highly significant (p<.01) and were moderately to strongly positive. In addition, variables in the practice environment were highly correlated with each other, and were almost equally correlated with both RN-MD communication and job satisfaction, showing that they indicate very similar facets of the work environment. The correlation matrix of main study variables is shown in **Table 1**.

To test the first research question, a series of ANOVAs was conducted to determine which, if any, of the nurse characteristics were associated with RN-MD communication. Because ANOVA requires that independent variables be categorical, age, years of experience, tenure (years in current institution), and status (years full-time work, years part-time work) were first regrouped into decades, and then ANOVAs were conducted on the grouped variables. Of the eight identified nurse characteristics (age, sex, ethnicity, educational level, years of experience, tenure, status, and type of position), none was statistically significant. Overall, no significant relationship was found between any nurse characteristics and RN-MD communication.

ANOVAs were performed on the hospital-characteristic variables to test for associations between organizational work characteristics and RN-MD communication. Hospital location (urban vs. rural) was the sole significant organizational characteristic (p=.04). RN-MD communication scores were regressed onto each of the environment scales (PES-NWI and CWEQ-II) and control variable (hospital location). Both practice environment (β=.27) and structural empowerment (β=.22) scales explained significant variance in RN-MD communication. The resulting model explained 20% of the variance in RN-MD communication scores (R^2=.20). These results indicate that nurses' perceptions of the effectiveness of RN-MD communication were affected by organization work environment factors.

To test the second research question, another series of ANOVAs was conducted to determine which nurse characteristic (age, sex, ethnicity, educational level, years of experience, years in current institution, status, and type of position) and organizational characteristic (hospital size, location, and type) variables should be included in regression models to explain variance in nursing job satisfaction. Only type of position (p=.006) was a significant nursing characteristic variable, and none of the hospital characteristic variables was significant. Nursing job satisfaction scores were regressed onto each of the environment scales (PES-NWI and CWEQ-II), RN-MD communication, and control variables (type of position). Practice environment (β=.39), structural empowerment (β=.22), and RN-MD communication (β=.37) scales were all significant predictors of job satisfaction. The resulting model explained 61% of the variance in nursing job satisfaction scores (R^2=.61). These findings indicate that the combination of work environment factors and RN-MD communication were very strong predictors of job satisfaction in this sample. **Table 2** shows results of all regression analyses.

According to the NREM, nursing roles, which include RN-MD communication, not only affect nurse outcomes directly but also mediate the relationship between structure

Table 1. Correlation Matrix of Main Study Variables (p<.01)

	(1)	(2)	(3)	(4)
(1) Structural empowerment	—			
(2) Practice Environment Scale of the NWI	.66	—		
(3) RN-MD communication	.39	.40	—	
(4) Job satisfaction	.61	.68	.60	—

Table 2. Results of Regression Analyses

		Beta coefficients				
Predictor	Criterion	Unstd.	Std.	SE Beta	t	R^2
Structural empowerment	RN-MD communication	.16	.22	.05	3.04	.20
Practice environment	RN-MD communication	1.42	.38	.27	3.76	.20
Structural empowerment	Nurses' job satisfaction	.33	.22	.08	4.31	.61
Practice environment	Nurses' job satisfaction	4.36	.39	.57	7.67	.61

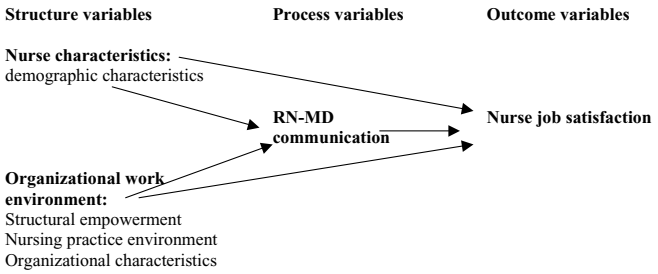

Figure. An adaptation of the Nursing Role Effectiveness Model. Adapted from "Linking outcomes to nurses' roles in health care," by D. Irvine, S. Sidani, and L. McGillis Hall, 1998, *Nursing Economics, 16* (2) pp. 58–64, 87. Copyright 1998 by Jannetti Publications. Reproduced with permission of Jannetti Publications.

variables (nurse and hospital characteristics, and practice environment scales) and outcome variables (nursing job satisfaction). To test the third research question, a final series of regression analyses, following the method suggested by Baron and Kenny (1986), was conducted. RN-MD communication was found to be a statistically significant mediator in the relationship between the practice environment and job satisfaction. The proportion of variance in nursing job satisfaction explained by the addition of RN-MD communication increased from 52% to 61%.

These results indicate that the work environment affected nursing job satisfaction in part through nurses' perceptions of the effectiveness of their communications with physicians. However, the incremental change in the relationship between empowerment and practice environment scale scores and job satisfaction was very small when RN-MD communication was entered into the regression model. *T* values increased from 4.43 to 5.37 for structural empowerment, and from 7.89 to 8.93 for the practice environment scale. Thus, RN-MD communication was a small mediator in the relationship between practice environment factors and job satisfaction. According to Baron and Kenny (1986) as the mediator becomes more significant, any direct relationships become smaller, with full mediation occurring when direct relationships are zero. Tested relationships of the NREM are shown in the **Figure**.

Discussion

The most interesting finding from this study was that the combination of the practice environment scale, structural empowerment scale, and RN-MD communication explained over 60% of the variance in nurses' job satisfaction. Although this study was the first reported to link the practice environment scale to job satisfaction, structural empowerment explained more variance in job satisfaction than did personal characteristics such as mastery or achievement needs in an earlier study (Manojlovich & Laschinger, 2002). One recent study showed positive associations between magnet hospital characteristics (upon which the practice environment scale is based) and structural empowerment, implying that the two conceptualizations of the work environment might be more similar than different (Laschinger et al., 2003). Based on study findings here, the implication for nursing is that more attention to the practice environment is needed. Identifying relevant factors in the environment might be a potential long-term strategy to improve nurses' job satisfaction.

Study findings showed mixed results for relationships proposed in the NREM. None of the nurse characteristics was significantly associated with RN-MD communication scores. Nurse characteristics were not consistently associated with RN-MD communication or job satisfaction, as posited in the NREM. Although inconsistent with the theoretical model, this finding might be viewed as positive, because many nurse characteristics are not amenable to change. Type of position was associated with job satisfaction, consistent with earlier research (Ma et al., 2003).

Hospital characteristics such as size, location, and teaching status have been previously associated with RN-MD communication (Shortell et al., 1994). Ma and colleagues (2003) reported that nurses' job satisfaction varied significantly related to the hospital characteristic of location only. In this study, only one organizational characteristic, hospital location, was associated with both RN-MD communication and job satisfaction.

Previous researchers have reported direct relationships between RN-MD communication and nursing job satisfaction. One study showed a significant correlation between RN-MD communication and job satisfaction (Sengin, 2003). In another study, an attentive communication style and avoidance of dominant or contentious communication styles were shown to significantly affect nurses' perceptions of nurse-physician collaboration and nurse satisfaction (Coeling & Cukr, 2000). In this study, RN-MD communication was a significant predictor of nurses' job satisfaction independent of other variables. RN-MD communication was also a significant mediator in the relationship between nurse characteristics, organizational characteristics, and nursing job satisfaction, consistent with the NREM. Other process variables likely are stronger mediators of the relationship between the practice environment and job satisfaction. However, findings here provided support for the overall structure-process-outcome format of the NREM model in relation to nurses' job satisfaction. The increase in explained variance from 52% to 61% with the addition of RN-MD communication in the mediation model indicates that improving communication between nurses and physicians might be one way to improve nurses' job satisfaction.

Not surprisingly, the practice environment and structural empowerment scales were predictors of both RN-MD communication and nursing job satisfaction. A recent qualitative study done in magnet hospitals showed a positive association between the quality of nurse-physician

relationships and quality of care reported by nurses (Kramer & Schmalenberg, 2003). Nurses who worked in magnet hospitals reported higher levels of both structural empowerment and job satisfaction than did those who worked in nonmagnet facilities (Upenieks, 2003). The current study extends those findings to indicate that effective strategies to improve the practice environment for nurses might have far-reaching consequences.

This cross-sectional study provided a single instance instead of tracking RN-MD communications over time, and thus findings must be interpreted with caution. The nonexperimental cross-sectional design also precluded determination of any cause-and-effect relationships. Longitudinal study is needed to determine whether the findings would hold over time and with different populations. Social-desirability response-effect bias was decreased by assuring potential respondents of their anonymity and confidentiality of individual reports.

Conclusions

This study indicated support for the overall structure-process-outcome configuration of the NREM. Structural empowerment, the nursing practice environment, and RN-MD communication were independent predictors of job satisfaction. In addition, RN-MD communication was a small but significant mediator in the relationship between the practice environment and job satisfaction. Over 60% of the variance in nurses' job satisfaction was explained by the combination of practice environment factors and RN-MD communication, providing compelling evidence of the importance of the work environment for nurses' job satisfaction.

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