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INFLUENCE OF STRESS AND NURSING LEADERSHIP ON JOB SATISFACTION OF PEDIATRIC INTENSIVE CARE UNIT NURSES

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From Marquette University, Milwaukee, Wis (MMB), University of Alabama at Birmingham (MB), University of Wisconsin-Milwaukee (SK), and the National Association of Children's Hospitals and Related Institutions, Alexandria, Va (LL).

- **BACKGROUND** High levels of stress and the challenges of meeting the complex needs of critically ill children and their families can threaten job satisfaction and cause turnover in nurses.
- **OBJECTIVE** To explore the influences of nurses' attributes, unit characteristics, and elements of the work environment on the job satisfaction of nurses in pediatric critical care units and to determine stressors that are unique to nurses working in pediatric critical care.
- **METHOD** A cross-sectional survey design was used. The sample consisted of 1973 staff nurses in pediatric critical care units in 65 institutions in the United States and Canada. The following variables were measured: nurses' perceptions of group cohesion, job stress, nurse-physician collaboration, nursing leadership, professional job satisfaction, and organizational work satisfaction.
- **RESULTS** Significant associations ($r = -0.37$ to $r = -0.56$) were found between job stress and group cohesion, professional job satisfaction, nurse-physician collaboration, nursing leadership behaviors, and organizational work satisfaction. Organizational work satisfaction was positively correlated ($r = 0.35$ to $r = 0.56$) with group cohesion, professional job satisfaction, nurse-physician collaboration, and nursing leadership behaviors. Job stress, group cohesion, job satisfaction, nurse-physician collaboration, and nursing leadership behaviors explained 52% of the variance in organizational work satisfaction. Dealing with patients' families was the most frequently cited job stressor.
- **CONCLUSIONS** Job stress and nursing leadership are the most influential variables in the explanation of job satisfaction. Retention efforts targeted toward management strategies that empower staff to provide quality care along with focal interventions related to the diminishment of stress caused by nurse-family interactions are warranted. (*American Journal of Critical Care*. 2000;9:307-317)

Nurses working in pediatric intensive care units (PICUs) are specialists within a specialty. These nurses are faced with complex challenges of not only meeting the needs of sick children but also supporting the needs of the children's families. In addition, issues related to caring for children

who are in pain, suffering, or dying can be extremely stressful. Contributing to the stress that PICU nurses perceive are current trends in healthcare of cost containment, unit downsizing, increased acuity of patients, technological advances, and diminishing resources. All these factors can influence nurses' satisfaction with their jobs.

Leaving the job (turnover) is more likely among nurses who experience stress and lack of satisfaction

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in their jobs than among nurses who do not experience these conditions. Oehler and Davidson¹ reported that job stress is the strongest predictor of burnout in pediatric nurses. Pediatric nursing attracts a unique group of nurses who are committed to the care of sick children. Because of the self-selection to this specialty, maintaining job satisfaction and retention of these nurses is critical.

Many of the factors that affect nurses' job satisfaction have been linked to elements in the practice environment. Previous research focused on the relationship between nurses' job satisfaction and job stress,¹⁻⁵ management style of the nursing leadership,^{4,6-8} empowerment,^{9,10} group cohesion,^{3,11} nurse-physician collaboration,^{12,13} and quality of care.² The relationship between nurses' job satisfaction and retention, intent to stay, or turnover has also been investigated.^{2,3,14-19} Studies^{3,7,20,21} have also explored the influence of individual characteristics of nurses, such as age, experience, and anticipated turnover. Characteristics of nurses' work setting, particularly type of shift³ and shift length,^{4,22} have also been examined in relationship to job satisfaction and levels of job stress.

Meta-analyses^{23,24} of job satisfaction and existing studies consistently emphasize the important relationship between nurses' job satisfaction and the nurses' perceptions of a positive work environment, cohesive and collaborative staff relations, and supportive management. These studies also illustrate the adverse influence that stress has on nurses' satisfaction and the quality of patients' care.

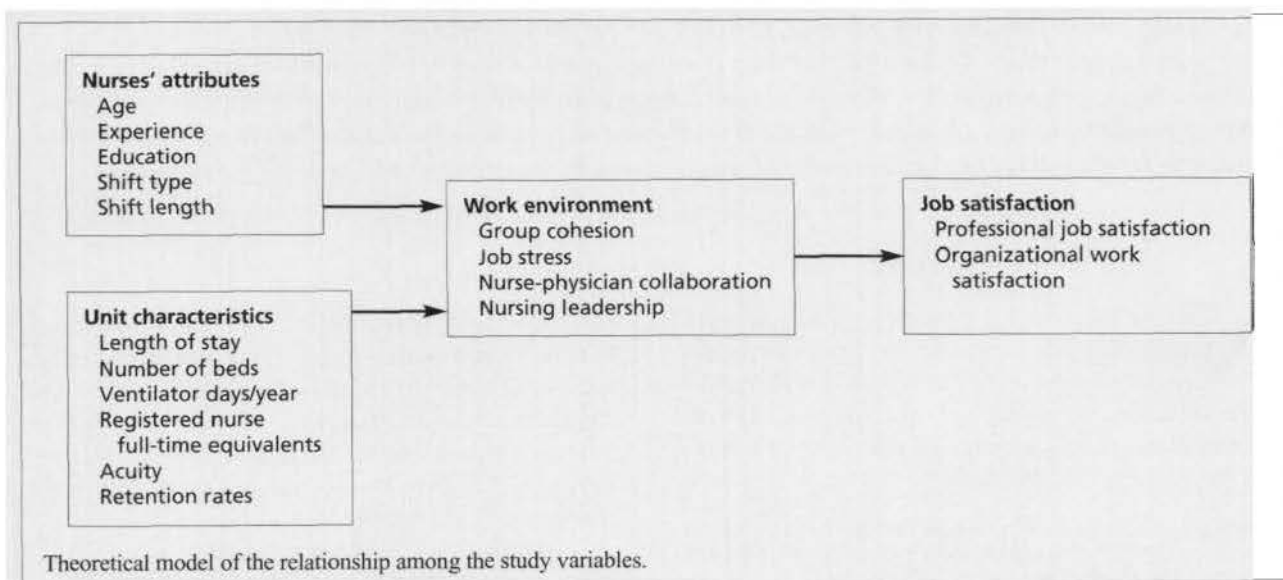
Previous studies examined factors influencing nurses' satisfaction across a variety of acute care inpatient

units but largely neglected nurses who work in PICUs. Because of the lack of previous research related to job satisfaction and pediatric nurses, it is unknown whether existing models of job satisfaction are relevant to this specialty. The purpose of this study was to explore factors that influence nurses' job satisfaction, including nurses' attributes, characteristics of the PICU, and nurses' perceptions of the work environment across a multi-institutional population of PICU nurses. The specific research questions were as follows:

1. What is the relationship between perceptions of the work environment and job satisfaction?
2. What is the relationship between nurses' attributes, perceptions of factors in the work environment, and job satisfaction?
3. What factors best predict nurses' satisfaction with their jobs?
4. What is the relationship between unit characteristics, perceptions of factors in the work environment, and job satisfaction?
5. What are the unique stressors for nurses working in a PICU?

Conceptual Model

The model for this study (see Figure) is based on research,^{2,3,11,18,19,25} job satisfaction, and turnover. Variables included in the model are those that were significant in studies of nurses from other specialties. On the basis of more recent information,^{2,6,10,26} the variable of nursing leadership was added because of its influential role in nurses' job satisfaction. Likewise, researchers are beginning to explore the relationship between nurse-physician collaboration



and job satisfaction.^{12,13} Because of the collegiality that nurses and physicians share in the PICU and the need for collaboration, the effect of this variable on job satisfaction was of interest. Last, because pediatric critical care is a distinct subspecialty, the unique influences of individual nurses' attributes, the characteristics of the PICU, such as the size of the unit and the acuity of the patients, and the role of stress needed to be explored.

Methods

A cross-sectional descriptive study was used.

Participants

The sample consisted of 1973 registered nurses. The sample was drawn from 65 pediatric acute care institutions that were members of the National Association of Children's Hospitals and Related Institutions, an association of pediatric facilities in the United States and Canada.

Procedure

The National Association of Children's Hospitals and Related Institutions coordinated the study across the participating institutions and provided administrative support. The principal investigator (MB) held a joint appointment with a major university and one of the association member hospitals. The project coordinator (LL), employed by the national association, managed the study and maintained communication across institutions. Each participating institution had a designated site coordinator who was responsible for obtaining approval from the appropriate institutional review board and for implementing the study at that site. A doctoral student (MMB) and a university center for nursing research provided research assistance, data management, and statistical analysis (SK).

Study instruments were compiled in a packet of teleformatted questionnaires and were distributed to each institution. The site coordinators, at regularly scheduled nursing staff meetings, recruited participants. Data were collected once at each site during a 3-month period.

Measurements

The following predictor variables were measured by using self-report questionnaires: job stress, nursing leadership, group cohesion, and nurse-physician (PICU attending physician) collaboration. The outcome variable job satisfaction was considered a multidimensional construct made up of elements essential to enjoyment and fulfillment in a person's job. Two measures of satisfaction were used: a measure related

to professional job satisfaction and a measure related to organizational work satisfaction.¹⁴ Professional job satisfaction is a more global measure, whereas organizational work satisfaction is a multifactorial measure composed of elements related to the performance of the job and the larger organization. Table 1 is a summary of the variable definitions, measures, and psychometric properties. All measures had adequate reliability and validity.^{2,3,9,11,27,29,31} In addition, demographic information was collected on characteristics of each PICU and on individual nurses' attributes. Last, in order to determine the nature of stressors that PICU nurses experience, an open-ended question asking nurses to state what they thought was "uniquely stressful about working in a pediatric intensive care unit" was included.

Data Analysis

The data were analyzed by using SPSS 10.0 for Windows (SPSS Inc, Chicago, Ill, 1998). Descriptive statistics were used to describe the study sample. Zero-order correlation analysis was used to examine the relationship between the study variables. Analysis of variance was used to determine differences in work environment variables and job satisfaction according to nurses' demographic characteristics (age groups, amount of ICU experience, education, type and length of shift worked). Regression analysis was used to determine the predictive ability of the work environment variables on job satisfaction.

In order to maximize the sample size with each variable measured, all useable data were analyzed. However, not every participant provided useable data on each questionnaire; therefore variable sample sizes are noted for the statistical analyses. The largest discrepancy for the differences in sample sizes is for the variable nurse-physician collaboration. Nurses were asked to complete 2 collaboration instruments: an instrument about collaboration with PICU attending physicians and an instrument about collaboration with nonattending physicians. Respondents perceived the 2 instruments as duplicative, and some nurses did not complete both instruments. Because of the large amount of missing data on the collaboration between nurses and nonattending physicians, this variable was deleted from further analyses.

In order to determine the relationship between unit characteristics and the work environment variables, data were aggregated to the unit level. In order to justify the aggregation of individual data to the unit level, criteria developed by Verran et al³² were applied post hoc.

The first criterion, content validity, was assessed by evaluating each instrument to determine if the

Table 1 Variables and measures

Variable and definition	Instruments and subscales	No. of items	Cronbach α
Group cohesion General sense of individuals wanting to stay in a particular group	Group Judgment Scale ²⁷	6 (7-point Likert)	.85
Job satisfaction Multidimensional construct made up of elements essential to the enjoyment or liking of a person's job	Work Satisfaction Scale ¹¹ (Organizational work satisfaction) Administration Interaction Pay Professional status Task requirements Nursing Job Satisfaction Scale ¹¹ (Professional job satisfaction) Enjoyment Quality of care Time to do the job	32 (5-point Likert) 23 (5-point Likert)	.83 Subscales, .60-.84 .86 Subscales, .62-.78
Job stress The amount of stress nurses perceive in relationship to their jobs and work environment	Job Stress Scale ¹¹ Competence Physical work environment Staffing Team respect	22 (4-point Likert)	.85 Subscales, .65-.82
Nurse-physician collaboration Sharing by nurses and physicians of responsibility for problem solving and decision making related to patients' care ²⁸	Collaboration and Satisfaction About Care Decision ²⁸	8 (7-point Likert)	.96
Nursing leadership behaviors Management behaviors that enable staff to accomplish their work in meaningful ways	Leader Empowering Behaviors ^{29,30} Enhancing meaningfulness of work Fostering participation in decision making Facilitating goal achievement Expressing confidence in high performance Providing autonomy from bureaucratic constraints	27 (7-point Likert)	.96 Subscales, .67-.95
Nurse attributes Demographic characteristics of the nursing staff (age, experience, education, shift length and type)	Demographic Questionnaire	15	NA
Unit characteristics Demographic characteristics (number of beds, length of stay, ventilator days per year, registered nurse full-time equivalents, acuity, retention rate, number of intensivists)	Nurse Manager Unit Demographic Questionnaire	24	NA

NA indicates not applicable.

items reflected perceptions of the work group or the unit rather than the perceptions of individual nurses. Verran et al³² suggest that 90% of the items should reflect the collective referent group. According to an analysis, 3 of the instruments met this criterion: those on nursing leadership behaviors, collaboration, and group cohesion. However, 3 other instruments did not

meet this criterion. Approximately 45% of the items on the job stress instrument and 72% of the items on the organizational work satisfaction scale referred to the group or the unit, and 100% of the items on the nursing job satisfaction scale referred to the individual nurse. Because of the influential nature of the work group or the unit on nurses' perceptions of stress and

job satisfaction, it was concluded that aggregation of individual responses reflected the collective unit's impressions, thereby allowing analysis at the unit level.²

Representativeness, the second criterion, is determined by ensuring that the majority of the members of the group respond. In this study, the response rate was 70%, a percentage that exceeds the recommendation by Verran et al that at least a 50% response rate is acceptable for group representation.

The last criteria for aggregation to the unit level are reliability and validity. Reliability was assessed by calculating the Cronbach α for the item means of the aggregated data. The Cronbach α for each instrument was acceptable, ranging from .83 to .96 (Table 1). Comparison of variability within the group with variability across the group to assess intraclass correlation was not performed to determine validity.

Major themes of qualitative data on stressors in the PICU were determined by using content analysis. Data were then clustered into the thematic categories that emerged. In some instances, specific quotes that illustrated a particular theme were included in the results.

Results

The return rate on the questionnaires was 70%.

Characteristics of the Sample

At the time of the study, all the subjects had been employed in pediatric critical care for a minimum of 3 months and worked at least 20 hours per week (0.5 full-time equivalents [FTEs]). The majority of the sample were staff nurses (86%) with baccalaureate or higher degrees in nursing (61%). More than half (58%) of the respondents were less than 36 years old; 90% were less than 46 years old. The largest part of the sample had 6 to 10 years of experience in intensive care (28%) and 6 to 10 years of tenure at the current institution (27.7%). New graduates accounted for only 3.6% of the sample, and more than a quarter (27%) of the respondents had been in their current position less than

2 years. Nurses were almost evenly divided between the type of shift worked, with 34.7% working days, 31.3% working nights, and 31.2% working rotating shifts. The mean number of hours worked per week was 36 (SD = 9.18); 72.4% of the sample worked 12-hour shifts, and 12.1% worked 8-hour shifts.

Characteristics of the Units Sampled

A total of 70 units volunteered to participate in the study. These units were located primarily in academic-based institutions (46%) and/or freestanding children's hospitals (47%). The units had a mean of 17.81 beds (SD = 7.03, range = 6-38), a mean length of stay of 4.19 days (SD = 1.35, range = 2.1-8.6), and a mean daily census of 12.19 patients (SD = 5.85, range = 2.4-30). The mean number of ventilator days per year was 2142, and the mean number of patient days per year was 4243. The mean number of registered nurse FTEs per unit was 41.29 (SD = 23.31, range = 4.0-95.3).

Each unit's nurse retention rate was determined by calculating the percentage of individual nurses who were retained during the 12 months preceding data collection. According to this calculation, the mean retention rate was 80.46% (SD = 14.71%, range = 57%-100%).

Nurses' Job Satisfaction and Perceptions of the Work Environment

PICU nurses felt positive about the cohesiveness of their peer group on the unit, were moderately satisfied with their jobs, generally felt empowered by nursing management, and felt satisfied with the degree of collaboration that took place with their physicians. However, nurses reported being stressed in their jobs. The means, SDs, and ranges for the study variables are summarized in Table 2.

Results of the zero-order correlations revealed that the 2 measures of satisfaction, organizational work satisfaction and professional job satisfaction, were positively correlated with each other ($r = 0.46$)

Table 2 Work environment variables: means, SDs, and ranges

Variable	Mean	SD	Range	
			Potential	Actual
Group cohesion (n = 1963)	5.18	0.91	1.00 - 7.00	1.17 - 7.00
Job stress (n = 1953)	2.05	0.39	1.00 - 4.00	1.09 - 3.33
Nurse-physician collaboration (n = 1728)	4.34	1.38	1.00 - 7.00	1.00 - 7.00
Nursing leadership behaviors (n = 1960)	4.04	1.08	1.00 - 7.00	1.00 - 7.00
Organizational work satisfaction (n = 1973)	3.03	0.40	1.00 - 5.00	1.68 - 4.45
Professional job satisfaction (n = 1970)	3.35	0.44	1.00 - 5.00	1.73 - 4.74

Table 3 Correlation matrix for study variables*

Variable	1	2	3	4	5	6
1. Group cohesion						
2. Job stress	-0.43					
3. Nurse-physician collaboration	0.29	-0.37				
4. Nursing leadership behaviors	0.40	-0.47	0.34			
5. Organizational work satisfaction	0.52	-0.56	0.35	0.56		
6. Professional job satisfaction	0.29	-0.52	0.20	0.28	0.46	

* $P < .001$ with all correlations.

and had significant positive correlations with nursing leadership behaviors, group cohesion, and nurse-physician collaboration. On the other hand, job stress had significant negative correlations with all the other variables. Job stress was negatively correlated with organizational work satisfaction ($r = -0.56$), professional job satisfaction ($r = -0.52$), nursing leadership behaviors ($r = -0.47$), group cohesion ($r = -0.43$), and nurse-physician collaboration ($r = -0.37$). Table 3 is a summary of the results. All reported correlations were significant at $P < .001$.

Predictors of Job Satisfaction

With the individual nurse as the level of analysis, stepwise multiple regression was used to determine the contribution of the study variables to organizational work satisfaction. The entire model explained 52% of the variance in organizational work satisfaction. Job stress alone explained 32% of the variance; nursing leadership, an additional 11%; group cohesion, 6%; professional job satisfaction, 3%; and nurse-physician collaboration, 0.5%.

Another stepwise multiple regression was done with professional job satisfaction as the dependent

variable. The entire model explained 31% of the variance in professional job satisfaction. Job stress explained 27% of the variance; organizational work satisfaction, 3%; and nursing leadership, 1%.

Nurses' Attributes, Perceptions of the Work Environment, and Job Satisfaction

In order to ascertain their influence on perceptions of factors in the work environment, nurses' characteristics were examined. A 1-way analysis of variance was used to determine differences in the study variables according to type of shift worked, number of hours in the shift worked (shift length), age categories, education, and amount of ICU experience.

Shift Type. Four types of shifts were compared: days, nights, evenings, and rotating. Differences between shift types were significant for professional job satisfaction, job stress, nursing leadership behaviors, and nurse-physician collaboration. Post hoc comparisons revealed that nurses who worked day shifts perceived significantly higher levels of collaboration with physicians than did nurses who worked evening and night shifts. Nurses who worked rotating shifts perceived significantly more collaboration than did nurses who worked night shifts. Nurses who worked day shifts perceived significantly higher levels of leadership behaviors than did nurses who worked night shifts. Nurses who worked rotating shifts perceived higher levels of stress than did nurses who worked either day or night shifts. Last, nurses who worked night shifts perceived significantly higher levels of professional job satisfaction than did nurses who worked all other shifts. The results are summarized in Table 4.

Shift Length. Four different shift lengths, 8 hours, 10 hours, 12 hours, and rotating (mixture of 8, 10, and/or 12 hours), were analyzed to determine differences across the study variables. Differences were significant for nurses' perceptions of job stress and professional job satisfaction. Post hoc analysis revealed that nurses who worked mixed shifts had higher levels of perceived job stress (mean = 2.19,

Table 4 Analysis of variance summary table: variable means across type of shift worked

Variable	Mean				df	F	P
	Days	Evenings	Nights	Rotating			
Group cohesion	5.22	5.21	5.22	5.08	3, 1638	2.46	.06
Job stress	2.01	2.14	2.03	2.13	3, 1632	9.42	.001
Nurse-physician collaboration	4.52	3.95	4.08	4.31	3, 1631	10.12	<.001
Nursing leadership behaviors	4.14	3.88	3.93	4.05	3, 1633	3.78	.01
Organizational work satisfaction	3.03	2.99	3.00	3.03	3, 1645	.63	.60
Professional job satisfaction	3.34	3.22	3.41	3.33	3, 1643	5.15	.002

Table 5 Comparisons of variable means between nurses with various lengths of experience in an intensive care unit

Variable	Mean length of experience, years			df	F	P
	<2	2-5	>5			
Group cohesion	5.29	5.22	5.14	2, 1915	3.20	.02
Job stress	2.17	2.10	1.99	2, 1918	31.42	<.001
Nurse-physician collaboration	4.46	4.20	4.37	2, 1924	4.16	.02
Nursing leadership behaviors	4.19	3.97	4.03	2, 1923	4.44	.01
Organizational work satisfaction	3.11	2.99	3.03	2, 1917	9.8	<.001
Professional job satisfaction	3.32	3.36	3.36	2, 1918	.88	.42

range = 1-4) than did nurses who worked 10-hour (mean = 1.99) and 12-hour shifts (mean = 2.04) ($F_{3,1607} = 6.69, P < .001$). Nurses who worked a mixture of shift lengths also had lower levels of professional job satisfaction (mean = 3.24, range = 1-5) than did nurses who worked 12-hour shifts (mean = 3.38) ($F_{3,1601} = 5.32, P = .001$).

Level of Education. In order to examine differences in type of education, nurses with associate degrees were grouped with diploma nurses and compared with nurses with baccalaureate and higher degrees. No significant differences were found across any of the study variables according to type of educational background.

Age. Nurses were grouped into 3 age categories, 20 to 30 years ($n = 623$), 31 to 40 years ($n = 855$), and 41 years and older ($n = 453$). Differences between the categories were significant only for the amount of perceived job stress. Younger nurses (20-30 years old) experienced significantly more job stress than did the 2 other age groups ($F_{2,1928} = 13.72, P < .001$).

ICU Experience. Experience in an ICU was divided into 3 categories: less than 2 years, 2 to 5 years, and more than 5 years. Post hoc comparisons revealed that for all the study variables except professional job satisfaction, differences between nurses with less than 2 years of ICU experience and all other groups of nurses were significant (Table 5). Furthermore, nurses with less than 2 years of experience had the highest means for all the study variables except professional job satisfaction, in which all group means were not significantly different.

Unit Characteristics, Perceptions of the Work Environment, and Job Satisfaction

In order to determine the relationship between unit characteristics and perceptions of the work environment, data were aggregated to the unit level. No significant relationships were found between any of the study variables. However, it was hypothesized that

differences might exist between units according to the acuity level of patients on the units. An "acuity variable" was constructed that was based on a ratio of the number of ventilator days per unit in the preceding year and the number of registered nurse FTEs for that unit. Fifty-two units provided data on both variables. The ratios for the sample were ranked across 4 quartiles. Units in the upper quartile were categorized as high acuity ($n = 12$); those in the lowest quartile, as low acuity ($n = 13$); and those in the 2 middle quartiles, as moderate acuity ($n = 27$). A 1-way analysis of variance was used to compare differences across the 3 groups (Table 6). Significant differences were found across the 3 groups for all the variables except professional job satisfaction. Nurses on units with low acuity had significantly higher means on perceptions of group cohesion, collaboration with physicians, nursing leadership behaviors, and organizational work satisfaction than did nurses on units with moderate or high acuity. On these same units, nurses also perceived significantly lower levels of job stress.

Stressors in the PICU

A total of 1241 nurses provided qualitative responses to the open-ended question about unique stressors in the PICU. Content analysis of the responses revealed 3 major themes: issues concerning families, staffing, and death and dying. Family issues and dynamics were the most frequently cited stressors, reported by more than half of the respondents. Respondents acknowledged that it was stressful dealing with parents who were strained, difficult, or demanding. Dealing with "parents who are always on the edge," dealing with families in crisis, answering questions, and being held to a higher level of accountability ("having responsibility for someone's child is the greatest stress of all") were stressors reported. Nurses stated that they had "2 patients, the child and the family" and that both required nursing care. Having parents and family members at the bedside 24

Table 6 Comparison of variables across level of unit acuity*

Variable	Mean level of acuity			P	Significant differences		
	Low (n = 13)	Moderate (n = 27)	High (n = 12)		Low vs moderate	Low vs high	Moderate vs high
Group cohesion	5.52	5.17	5.08	<.001	†	†	
Job stress	1.91	2.04	2.05	<.001	†	†	
Nurse-physician collaboration	4.78	4.37	3.92	<.001	†	†	†
Leadership behaviors	4.43	4.09	3.86	<.001	†	†	†
Organizational work satisfaction	3.16	3.06	2.96	<.001	†	†	†
Professional job satisfaction	3.42	3.37	3.34	.08			

*Data available from 52 units was aggregated to unit level.

†Significant differences exist between groups.

hours per day was another source of difficulty because of the constant intensity of contact and an inability for nurses to get their work done.

Staffing concerns were the next most commonly stated stressor, reported by 27% of the respondents. Understaffing, high acuity, and unsafe assignments were often cited. Respondents stated that inadequate staffing coupled with high acuity compromised their ability to provide quality care. Heavy workload assignments, failure to take breaks or get meals, inability to attend educational opportunities, inexperienced staff, mandatory overtime, and rapid turnover of patients also contributed to nurses' level of stress.

Children and families who are experiencing dying and death were also prevalent stressors, cited by 22% of the nurses. Respondents described difficulties witnessing a child's death, experiencing the loss of a child that they have become attached to, and dealing with grieving families. Nurses also reported stress related to the societal norm that children should not suffer and die and to the ethical issues of prolonging a child's life when the outcome is hopeless.

Other stressors reported included the unit environment and working relationships. Difficulties with interpersonal relationships between nurses, shifts, management, and physicians were also described. Other concerns focused on the physical environment, particularly problems of noise, lack of space, and lack of available equipment. Last, nurses described difficulties in dealing with cases of child abuse and the occurrence of preventable injuries such as those experienced by unrestrained children in motor vehicle crashes.

Discussion

This study was designed to examine factors that influence job satisfaction of nurses who work in PICUs. In general, the respondents scored higher in

group cohesion, professional job satisfaction, and organizational work satisfaction and lower in perceived job stress than did nurses in other settings.^{2,3}

Job Satisfaction

Several of the variables explained a significant amount of variance in both professional job satisfaction and organizational work satisfaction. Job stress was the most important predictor of both professional job satisfaction and organizational work satisfaction. Professional job satisfaction reflected how nurses generally felt about their work, whereas organizational work satisfaction reflected their satisfaction with various factors in both the immediate work environment and the larger organization. The relationship between job satisfaction and stress as a major predictor is not surprising because of the small but strong unit culture that is often found in PICUs. High acuity levels, short staffing, and interpersonal relationships are all stressors cited by critical care nurses.^{5,33,34}

Nursing Leadership

The finding that leadership was a strong predictor of work satisfaction corroborate the results of previous research in the area. Leveck and Jones² and Nakata and Saylor⁷ also found that management style was associated with job satisfaction for nurses. Nurses who perceived their managers as having a participative style had higher job satisfaction than did nurses who had a different perception. Similarly, Morrison et al¹⁰ and Laschinger⁹ found a strong relationship between nurses' job satisfaction and a nursing management style that was perceived as one that empowered staff to perform their jobs effectively. Last, Boyle et al²⁶ also reported a relationship between job satisfaction and managers' characteristics, particularly managers' control over the work environment.

The results of the study reported here highlight the importance of the nurse-manager relationship and effective leadership as components of job satisfaction for pediatric critical care nurses. The data underscore the notion that nursing leadership that is perceived as supportive, and as providing a cohesive work environment in which nurses can collaborate effectively with other health professionals, has a positive influence on job satisfaction. Nurses want to feel that they are valued members of a team and that their contribution does make a difference, especially in the lives of critically ill children. In today's fast-paced healthcare settings and the stressful PICU environment, nurses find it crucial to have leaders who remove the barriers and secure for the nurses the resources needed for the provision of quality care.

Job Stress

Stress levels were highest among new and inexperienced nurses, a finding consistent with the results of other studies.⁴ This finding is not surprising, because new graduates tend to be the least experienced members of the PICU staff, are least comfortable with collaboration, and are still trying to find their "place" on the unit. The findings of this study did not support those of Gowell and Boverie,⁴ who found that stress levels were highest for nurses who worked 10-hour shifts. In the study reported here, it was not the length of the shift but rather the rotation of shifts that influenced job stress. Job stress was highest for nurses who rotated between types of shifts (days, evening, nights) and different lengths of shifts (8, 10, and 12 hours).

The analysis of the qualitative data on stressors indicates that families and their constant presence are influential factors in nurses' perceptions of the work environment. PICU nurses can feel overwhelmed trying to deal simultaneously with the multiple needs of an acutely ill child and the needs of the child's parents. Family-centered care is a core value in most children's hospitals,¹⁵ yet implementation of this philosophy can place a significant burden on any nurse who is trying to deliver care to a critically ill child while also caring for the child's anxious family members. Units that allow unlimited family visitation and embrace the family care philosophy should be cognizant of the stress that this practice places on staff personnel. Nurses on these units need to have resources in place to help them deal with complex family situations. Additionally, the time and energy needed to support patients' families should be recognized and factored into staff nurses' workload. The emotional impact of caring for dying children is also

a concern. In order to deal with this stressor, support systems should be available to help nurses cope with issues of death and dying.¹⁶

Group Cohesion

Group cohesion is most strongly linked to perceptions of the work environment and was a significant predictor of organizational work satisfaction in other studies.²³ In this study, nurses' perceptions of cohesiveness within the work group did not vary significantly across shift type or shift length. However, perceptions of group cohesion were lowest among nurses who rotated between day, evening, and night shifts. Apparently, cohesiveness, which is a relationship-based variable, is easier to achieve when a person works with the same people on a consistent basis. Perceptions of cohesiveness were also inversely related to level of experience. As nurses gained experience, their sense of cohesiveness declined. On the basis of this finding, retention efforts for more experienced staff should focus on team building and on maintaining a sense of connectedness with the peer work group.

Nurse-Physician Collaboration

The results provided only modest support for the inclusion of nurse-physician collaboration as a significant variable. Consistent with the findings of Baggs et al¹³ and Stichler,¹⁷ nurses' perceptions of collaboration with physicians, although important, were not strong predictors of job satisfaction. However, Stichler, using an instrument that measured interpersonal aspects of collaboration, found that nurse-physician collaboration was a slightly stronger predictor of organizational job satisfaction. Similar to Stichler's findings, the results of the study reported here indicated that nurses who worked evenings and nights had significantly lower perceptions of collaboration than did nurses who worked days. This finding is consistent with the decreased frequency of nurse-physician interaction that takes place during the evening and night hours. Inexperienced nurses also perceived higher levels of collaboration than did nurses with more experience. This finding most likely is related to a greater need to collaborate as the nurses learn and gain expertise in their new position.

Nurses' Attributes

The results of this study did not support those of other studies^{23,24} that found an inverse relationship between level of education and job satisfaction. In this study, none of the study variables differed according to level of education. Furthermore, this study did

not support findings^{23,24} that perceptions of job satisfaction were greater among older nurses than among younger nurses. In this study, differences in both organizational work satisfaction and professional job satisfaction across age groups were not significant.

In a comparison between the variables and amount of PICU experience, nurses with less than 2 years of experience had the highest means for all the study variables. On the basis of this finding, efforts should be made to maintain these positive perceptions of the work environment as nurses gain tenure on a unit. However, this group of nurses also had the highest levels of job stress. Assisting new staff members in a successful transition into their critical care nursing role is essential to maintaining positive perceptions of the work environment.

Unit Characteristics

In an effort to capture some indicator of unit acuity, number of ventilator days and number of registered nurse FTEs were combined. Analysis based on the creation of this variable revealed a relationship between acuity and most of the study variables. Units with the lowest acuity had the lowest means for job stress and the highest means for group cohesion, nurse-physician collaboration, nursing leadership behaviors, and organizational work satisfaction. As acuity increased, the means for job satisfaction and the work environment variables decreased and job stress increased. Interestingly, professional job satisfaction did not vary significantly between units with different levels of acuity. This finding presents a difficult challenge for units with a sicker, more complex population of patients. Units with large numbers of staff taking care of more acutely ill patients can threaten nurses' satisfaction. Retention efforts in these units should focus on helping nurses deal with the stressors and workload issues associated with caring for the more acutely ill population.

Unit Retention Rates

In this study, the unit retention rates were originally to be considered as an outcome variable as in other studies.^{20,21,25,26,27} However, the results did not indicate significant relationships between any of the variables and unit retention rates. The use of retention rates required aggregation of data to the unit level, a step that yielded nonsignificant results for any of the study variables as a predictor of retention. The absence of significant predictors for retention may be due to the lack of variability in retention rates across units rather than to a lack of a relationship between factors.

In order to indirectly assess the influence of the variables on turnover, a more practical alternative would be to examine nurse turnover as measured by the intent of leaving, or anticipated turnover, which is a person's perception of the possibility of leaving an organization. In other studies,^{2,3,17,18,19} anticipated turnover, which is a behavioral intention, was correlated with actual unit turnover rates.

Limitations and Future Directions

The cross-sectional design of the study limits the generalizability of the findings. A cross-sectional design, with a single period of data collection, provides only a view of participants' responses at that time. Whether the responses reflect perceptions over a longer period is unknown. Demographic information about sex was not collected. Possibly, male and female nurses would have different perceptions.

Because of the pivotal role of stress in job satisfaction, research efforts should focus on testing interventions targeted to areas of most concern to PICU nurses, namely family concerns and care of dying children, and to larger organizational issues related to staffing and workload. Nursing management remains a key variable in the job satisfaction of PICU nurses. Research efforts should continue to explore management interventions that empower staff and create a positive work climate.

Future study of the predictive ability of study variables that uses theoretical and statistical modeling techniques is warranted. This study provides important baseline data for future research focused on retention strategies and measures to improve job satisfaction.

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