

Instrumentation for Assessing Pivotal Features of Professional Nursing Care

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Abstract

Improving the operational structure of professional nursing care has been hindered by the lack of a tool that measures pivotal features of nursing care delivery. This article describes the development of The Professional Patient Care Index (PPCI), an instrument for assessing pivotal features of professional nursing care as perceived by the staff nurse. Development of the PPCI emerged from a larger study of the relationship between primary nursing and selected variables of nurse satisfaction. The PPCI provides an opportunity for nurses to move beyond mere advocacy for improvements in professional nursing care processes to rating the pivotal features as an assessment for operational refinement. These features focus on nursing care, patient care outcomes, and nurse job satisfaction.

Instrumentation that Assesses Pivotal Features of Professional Nursing Care

Professional nursing is possible only when the nurse and patient are positioned operationally to establish a relationship, no matter what the context, that can withstand the dynamics of contemporary health care. It is this relationship that has always been the foundation of nursing [1]. Examinations of organizational structures that promote this relationship have been hindered by the absence of a tool for assessing key operational features of nursing care delivery. The Professional Patient Care Index (PPCI) was created to be that tool. Development of the tool was undertaken as part of a larger study that examined the relationship between a primary nursing modality of care and multiple variables of nurse satisfaction [2].

Literature review

Features of primary nursing have been held forth as the pillars of professional care that create efficiency and satisfaction amongst staff nurses [3-12]. Features of primary nursing were also identified in all of the original 41 magnet hospitals [7, 9, 11, 13-16]. Magnet hospitals have been recognized leaders attracting and retaining professional nurses [17].

The nursing community has vacillated between primary nursing and other models of care delivery since the time of Florence Nightingale [18]. This vacillation has been due, in large part, to the lack of empirical studies that measure the relationship between primary nursing and other variables within the organization [2, 19, 20]. Studies comparing primary nursing to other models of care have found mixed results [21, 22]. Understanding the effects that primary nursing as a professional model of care has on the work environment of the nurse has

been hindered by the absence of a psychometrically tested instrument. The PPCI has been developed to test the ecological effects of a primary nurse model of care as reported by staff nurses.

Theoretical framework

The theoretical framework for this paper lies within a larger study of the relationship between primary nursing and selected variables of nurse job satisfaction [2]. Results of that study are beyond the scope of this paper and are described elsewhere [2]. Monitoring the effects of systems within the work environment is essential for an accurate understanding of how systems facilitate or impede the work process [23]. Sociotechnical systems theory (STS) suggests that improving the work environment is possible only if both social and technical needs of the workers are addressed [24, 25]. Charns and Strayer [26] applied STS theory to improve the communication processes of employees in a facility for the mentally challenged. Ziegenfuss [27] also applied STS within a mental health care environment to examine the rights of patients. Pasmore, Pettee, and Bastian (1986) used the STS approach to improve the work environment of the health care system they were working in [28].

Application of Sociotechnical Systems Theory involves the active participation of not only managers but also the direct care givers in designing work processes. Involvement of the direct care givers is essential because of their intricate understanding of the processes necessary to get the work done [29]. Development of a primary nurse model of care, called *The Professional Nurse* within the institution where the current study took place, included both line workers (RNs) and managers. Thus it was appropriate to use the theory of STS to guide this research.

Creation of the Professional Nursing Index (PPCI)

Nursing staff within a large Midwestern tertiary care center formed a task group comprised of staff nurses, nursing administrators and union representatives to define a high quality model of nursing care delivery. The definition would include a set of operational definitions that would enhance the process of nursing care delivery. The task force was formed in response to advice received from an outside consultation firm to create a model of care that would promote continuity of patient care through the continuum of care and enhance communication among participating disciplines.

Primary nursing was the model of interest [30]. After three months of discussion centered on primary nursing, the task force developed a model called, *The Professional Nurse*. The model was consistent with models of primary nursing described in the literature [7, 9, 11, 13-16]. The model included four "pivotal features" of a primary nursing environment: a) develop a *plan of care*; b) establish a *relationship* with the patient and family; c) provide *continuity of care* from admission to discharge while on the nurse's unit; d) *collaborate* with other disciplines involved in the care of the patient.

Subsequent development of the PPCI began by having nurses at the same tertiary care center complete a survey. The survey asked them to rank each of the four pivotal features from the Professional Nurse definition on a seven-point Likert scale. The response options ranged from 1 ("strongly disagree") to 7 ("strongly agree"). Strongly agree" (or "agree" and

"strongly agree") indicated that the nurse perceived that pivotal feature of a primary nurse environment being present on their unit.

Methods

The study took place at a 700 bed tertiary care center. Potential participants had to be registered nurses who were employed on participating units. On-call staff, float-pool nurses, and agency nurses who worked on the unit on a periodic basis were not included. Only those nurses who were identified by the nurse manager as unit-specific staff were included. A letter of introduction to the study and a statement of consent were placed in each nurse's workplace mailbox. Completed packets were returned to the investigator via inter-office mail to a designated location. Each packet was coded for unit and nurse. Codes were used for the purpose of test-retest in establishing reliability of the PPCI. The code on the envelope was not traceable to any particular unit or nurse except by the master code list available only to the primary investigator.

A ten-day period was allocated for completion and return of the questionnaires. A reminder letter was placed in each mailbox 2 weeks after the initial placement of the envelopes for those who had not returned completed questionnaires. Another 10 days were allowed for final completion of the questionnaires. Surveys were sent to 1008 nurses on the 25 participating units. A total of 378 surveys were returned, a 37.4% response rate.

Age of the study subjects ranged from 22 to 66 years, with a mean of 40 years ($SD = 10.58$). Responders were predominantly female (91%) and married (58.4%). Just over half

were baccalaureate prepared (50.4%). Almost three fourths (74.5%) reported some education outside of nursing, with the majority of this educational preparation being baccalaureate degrees (59.5%). Hours worked ranged from .1 to 1.0 of full time, with a mean of .76. Sixteen percent worked day shift, 24% worked evening shift, 22% worked night shift and 35% worked rotating shifts of days and evenings or days and nights. Length of experience as a nurse ranged from one month to 42 years, with a mean of 12 years ($SD = 10.35$). Employment within this particular hospital varied from one month to 45 years, with a mean of 10.09 years ($SD = 8.71$). Length of service on respective units varied from one month to 40 years, with a mean of 7.48 ($SD = 7.48$).

Education and marital status were each categorized into subgroups. Education in nursing was categorized into baccalaureate/masters ($n=190$) and associate degree/diploma ($n=187$). Education outside nursing was categorized into baccalaureate/masters ($n=108$) and associates/other ($n=74$). Marital status was categorized into partnered (married and domestically partnered; $n=225$) and single (single, widowed, and divorced; $n=152$).

Validity of the PPCI

Content validity refers to the adequacy of an instrument to represent all possible questions to acquire information about the topic of interest [31]. Content validity was established by sending the PPCI to a panel of experts: six leaders of primary nursing in the United States. All of the leaders had extensive experience with primary nursing care, have published in both journals and books of health care, and have been consulted globally for their expertise in professional models of nursing care. They were asked if they agreed or disagreed that each item of the PPCI was consistent with some element of primary nursing as they

understood it. Five surveys were returned. The leaders who returned the surveys were as follows:

1. Luther Christman, RN, PhD, FAAN. Dr. Christman is the former vice president of patient care and dean of the School of Nursing at Rush-Presbyterian University Medical Center in Chicago, Illinois.

2. Joyce Clifford, RN, PhD, FAAN. Dr. Clifford was director of the Institute for Nursing Healthcare Leadership in Boston, Massachusetts.

3. Kathy Horvath, RN, MS. Ms. Horvath was the project director for the Home Safety Grant at the Veterans Hospital in Bedford, Massachusetts.

4. Marie Manthey, RN, MS, FAAN. Ms. Manthey is president emeritus and founder of Creative Nursing, a consulting firm for health care services. The company's headquarters is located in Bloomington, Minnesota.

5. Karen Zander, RN, MS, CS, FAAN. Ms. Zander was principal and co-owner of The Center for Case Management, a consulting firm for case management in South Natick, Massachusetts.

Three of the five respondents reported item three to be inconsistent with some element of primary nursing as they understood it. The item had read, "Develops, communicates, and facilitates the plan of care from admission through discharge to aid smooth patient transition." Based on suggestions from the panel of experts, item three was changed to read, "Develops, communicates, and facilitates the plan of care from admission to the unit/department through discharge from the unit/department to aid smooth patient transition." The concern reported by all three related to the issue of increasingly shorter stays

and more frequent use of outpatient care. All three felt the original contextual definition was too limiting.

There were eight items that evaluated the four features of professional nursing care. Each of the eight items were formatted into a Likert scale for nurses to report whether they strongly disagreed or agreed that primary nursing care was an operational reality on their unit. The response options ranged from 1 ("strongly disagree") to 7 ("strongly agree").

Reliability of the PPCI

Retest of the PPCI was conducted by sending the PPCI to a sub-sample of the 378 nurse who originally responded to the survey. The first 100 respondents to the initial survey received a second PPCI two weeks after the initial questionnaire was received. Eighty-two members of the sub-sample returned their surveys, an 82% response rate. The reliability coefficient was then calculated to reveal the magnitude of the test's reliability. A positive correlation of .70 was set as the desired correlation as Polit and Hungler [31] assert this should be considered satisfactory. Spearman's Rho correlation for test-retest was .73, with a significance level of $<.001$.

Internal consistency was assessed utilizing Cronbach's alpha. A Cronbach's alpha of .70 was accepted as minimum. Cronbach's alpha for the PPCI was .86, well above the acceptable minimum.

Item analysis of the PPCI

Bar graphs of each item were examined to see if any of the items received the same score by more than 90% of the respondents. None of the items were found to have this level of report. Histograms of each item revealed mesokurtic distributions in contrast to possible leptokurtic distributions.

Each item of the PPCI was then examined with respect to the correlation each item had with the total score of the PPCI. Item numbers one through four had correlations of .72, .92, .75, and .66 respectively. All were significant at the .001 level of significance. A correlation matrix of the responses was also used to examine the intercorrelations of all the items. Refer to Table 1 for the zero-order correlation matrix of the PPCI.

Table 1: Correlation matrix of all PPCI items

	Item 1	Item 2a	Item 2b	Item 2c	Item 2d	Item 2e	Item 3	Item 4	Total score PPCI
Item 1 Correlation Significance N	1.0								
Item 2a Correlation Significance N	.643 .000 377	1.0							
Item 2b Correlation Significance N	.471 .000 375	.581 .000 376	1.0						
Item 2c Correlation Significance N	.454 .000 376	.616 .000 .377	.697 .000 375	1.0					
Item 2d Correlation Significance N	.478 .000 376	.517 .000 377	.418 .000 375	.485 .000 376	1.0				
Item 2e Correlation Significance N	.427 .000 376	.445 .000 377	.384 .000 375	.436 .000 376	.662 .000 376	1.0			
Item 3 Correlation Significance N	.431 .000 377	.346 .000 378	.287 .000 376	.296 .000 377	.494 .000 377	.536 .000 377	1.0		
Item 4 Correlation Significance N	.372 .000 377	.391 .000 378	.343 .000 376	.370 .000 377	.405 .000 377	.358 .000 377	.514 .000 378	1.0	
Total Score PPCI Correlation Significance N	.732 .000 372	.728 .000 372	.602 .000 372	.652 .000 372	.770 .000 372	.727 .000 372	.753 .000 372	.660 .000 372	1.0

The effect on reliability of deleting a variable was tested for each of the eight variables. . Deleting any one of the eight variables from the PPCI did not improve the alpha of the PPCI.

Limitations

Review of the literature has not revealed other instruments that measure ecological features of primary nursing. Therefore, validity of the PPCI relies on the expertise of the five above-mentioned leaders in the field of nursing who are recognized as experts in the ecological features of primary nursing. In addition, this is the only study that has tested the PPCI; thus, it is considered to be in the early stages of development. However, it is important to note that during the writing of this manuscript, further testing of the PPCI was underway in an institution implementing a professional model of nursing care. Results of ongoing validity testing are forthcoming.

Results

Nurses in the study group had an average PPCI score of 5.31 on the seven-point Likert Scale. Question three revealed the greatest challenge of delivering nursing care. This question addressed the nurses' perception of their ability to provide continuity of care for the patient(s) in their care. The average score for question three among six of the twenty-five units was at or below the midpoint of 4.0, indicating more disagreement than agreement regarding continuity of care. However, despite this, the overall mean among the participants for question three was above the midpoint at 4.2. Those who worked the night shift were the only respondents with a mean response for question three below the midpoint. It appears that those who work the night shift felt least connected with their ability to provide continuity of

care for their patient(s). The Mental Health community was the only clinical community out of 5 that reported a score below the midpoint of 4.0 for question number 3. This difference between communities was statistically different at the .001 level of significance. There were no differences between hours worked, or years worked on unit when examining item number three. Descriptive statistics for each item from the PPCI can be found in Table 2.

Discussion

Primary nursing as a professional modality of care has been written about in virtually every category of clinical nursing care. Graham (1993) concisely summarized the following main assertions of primary nursing: "Primary nursing remains the only care delivery system that facilitates the therapeutic relationship of nursing which, in combination with individual accountability, personal decision making and continuity of care, forms a powerful professional package" (p. 29). Despite the inspirational arrangement of these words, they have not provided the data needed to justify time and resources for models of direct care such as primary nursing (Bond, Bond, & Fowler, 1991; Brannon, 1994; Hancock, 1992).

Recent use of the PPCI in an unpublished ecological study staff nurses has revealed that the nurse's perception of being able to provide professional nursing care explains over 50% of the variance of job satisfaction [32]. These data delineate the pervasiveness of nurse-patient relationship in job satisfaction of staff nurses. When one considers the current concern in health care about nursing personal turnover, this data are compelling. Mills and Blaesing's study of 4000 Missouri nurses revealed that reward derived from patient care was the number one reason nurses not only entered nursing, but stayed in nursing [33]. As these data begin to accumulate, it becomes

Table 2

Descriptive Statistics of PPCI

Item	n	Possible Range	Actual Range	Midpoint	Mean	SD
1	378	1-7	1-7	4	5.16	1.41
2a	378	1-7	1-7	4	5.71	1.10
2b	376	1-7	3-7	4	5.98	.81
2c	377	1-7	1-7	4	5.95	.94
2d	377	1-7	1-7	4	5.01	1.45
2e	377	1-7	1-7	4	5.03	1.30
3	378	1-7	1-7	4	4.22	1.54
4	378	1-7	1-7	4	5.31	1.36
Total Score PPCI	372	1-7	2-7	4	5.31	.89
PPCI Test-Retest Time One	82	1-7	3-7	4	5.31	.85
Time Two	82	1-7	1-7	4	5.36	1.03

Note: Low numbers mean low agreement that the item was an ecological feature within the facility
High numbers mean high agreement that the item was an ecological feature within the facility

clearer that paying attention to the integrity of the nurse patient relationship is likely the key that will turn the nurse shortage around. Consider the cost of recruiting one RN is between \$45,000 and \$75,000 and the average turnover for a US hospital is 21% [34] the annual costs of turnover enter into the millions very quickly. Using these data, it translates into 9.45 to 15.75 million dollars per year for a hospital with 1,000 nurses. The need to pay attention to what is at the core of job satisfaction for staff nurses becomes essential. Until we begin examining this empirically, we will continue in academic debate. The opportunity to examine this empirically using the PPCI is at its infancy, but it is the hope of the researcher who has authored this article that other researchers will add to this scientific knowledge so we can refine the relationship that is the foundation of hospital care.

It was interesting to note that the night shift was most distressed with providing primary nursing care. This finding is consistent with current literature [35]. This adds to the validity of what is being measured.

The PPCI performed statistically above that which was expected. However, the PPCI is within its infancy and will require further testing and refinement. The author of this article encourages other researchers to utilize the measure that has been provided in it's entirety to use the measure for additional studies. An accumulation of data will help defend or refine the use of the PPCI.

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