

Development of an Instrument to Measure Patient Perception of the Quality of Nursing Care and Related Hospital Services at the National Hospital of Sri Lanka

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Purpose This study aimed to develop and validate an instrument to measure patient perception of quality of nursing care and related hospital services in a tertiary care setting.

Methods We compiled an instrument with 72 items that patients may perceive as quality of nursing care and related hospital services, following an extensive literature search, discussions with patients and care providers and a brainstorming session with an expert panel. A cross-sectional study was conducted at the National Hospital of Sri Lanka. A sample ($n = 120$) of patients stayed in general surgical or medical units responded to the interviewer administered instrument upon discharge. Item analysis and principal component factor analysis were performed to assess validity, and internal consistency was calculated to measure reliability.

Results Of the 72 items, 18 had greater than 20% of responses as 'not relevant'. A further 11 items were eliminated since item-total correlations were less than .2. Factor analysis was performed on remaining 43 items which resulted in 36 items classifying into eight factors accounting for 71% of the variation. Factor loadings in the final solution after Varimax rotation were interpersonal aspects (.68-.85), efficiency (.62-.79), competency (.66-.68), comfort (.60-.84), physical environment (.65-.82), cleanliness (.81-.85), personalized information (.76-.83), and general instructions (.61-.78). The instrument had high Internal consistency (Cronbach's alpha = .91).

Conclusion We developed a comprehensive, reliable and valid, 36-item instrument that may be used to measure patient perception of quality of nursing care in tertiary care settings. [*Asian Nursing Research* 2011;5(2):71-80]

Key Words nursing care, nursing services, patient satisfaction, quality of health care, validation studies

INTRODUCTION

The patients' perception of the quality of nursing care and hospital services is increasingly seen as an important measure in examining quality of health care (Donabedian, 1988; Ross, Steward, & Sinacore,

1993; Siztia & Wood, 1997). Perceptions of the quality of care are influenced by the expectations of the person who uses care as well as actual nature of the care being received (Ware, Snyder, Wright, & Davies, 1983) No longer is it desirable or acceptable for health care professionals to be the sole judges of the



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quality of the care provided. Patients as customers of the care offered are considered important sources of information for the evaluation of existing ones and development of new care programs. A standardized and valid measure that allows comparisons of patients' perspectives across hospitals and time is important in assessing quality of nursing care (Young, Meterko, & Desai, 2000).

In many developing countries including Sri Lanka, patients' perceptions about quality of health care delivery seem to have been largely ignored by health care managers in government hospitals. Few studies have assessed limited aspects of patient satisfaction in hospital settings in Sri Lanka, but never used a validated instrument (de Silva & Dharmage, 1996; Senarath, Fernando, & Rodrigo, 2006). The quality nursing care, which is one of the important components of the total care provided for in-patients by a health institution, has not been evaluated. Lack of a valid and reliable tool to assess quality of nursing care may have contributed to this paucity of research evidence. In contrast, internationally, it is a common practice to develop and validate instruments that offer brief, theoretically oriented, internally consistent, and valid measures of quality of nursing care (Davis et al., 2005). Such instruments would be useful for health managers and nursing staff to assess the quality of the nursing care provided and to identify aspects for improvement.

Researchers especially in the developed countries have designed valid instruments to measure the customer perception of quality of care. Service Quality (SERVQUAL) is a 22-item instrument designed to evaluate customer perception of business service quality (Parasuraman, Zeithaml, & Berry, 1988). SERVQUAL scale was adopted for determining patient perception with quality of nursing care, among patients on discharge at several settings (Gonzalez-Valentin, Padin-Lopez, & de Ramon-Garrido, 2005; Uzun, 2001). Patient Perception of Hospital Experience with Nursing (PPHEN) was another instrument used in the health settings in the United States (Dozier, Kitzman, Ingersoll, Holmberg, & Schultz, 2001). The PPHEN was validated using factor analysis identifying six constructs, and finally, selecting a single construct with 15 items that was described as "feeling

cared for" as the instrument. In Turkey, an instrument was developed to measure patient satisfaction with quality of care with seven interpretable factors: nutritional care, physician care, nursing care, room atmosphere, procedure of incoming patients, room cleanliness and other services such as cafeteria and parking (Yildiz & Erdoğan, 2004). A patient centered questionnaire, Patient Satisfaction with Nursing Care Quality Questionnaire (PSNCQQ) has shown excellent psychometric properties and yielded actionable, patient focused results that can be used by managers to address areas requiring improvement in Canada (Sandin Bojo, Hall-Lord, Axelsson, Uden, & Wilde Larsson, 2004). A recently developed instrument in United States recognized five dimensions, namely, individualization, nurse characteristics, caring, environment and responsiveness in the Patient Assessment of Quality Scale—Acute Care Version (PAQS-ACV; Lynn, McMillen, & Sidani, 2007).

Health care in the state hospitals in Sri Lanka is provided free of charge at the point of delivery. There have been many recent developments in the infrastructure and facilities in state hospitals in Sri Lankan hospitals and especially at the National Hospital in Sri Lanka. However, these hospitals do not have a proper system to monitor and assure the quality of care, and especially from the service recipients' point of view. The instruments used in other countries would have limitations in applying in the Sri Lankan setting which has unique cultural characteristics, such as high level of contentment, equanimity and empathy among people in a predominantly Buddhist society (Gunathunga, 2010). This study was aimed to construct and validate a comprehensive and internally consistent instrument to measure patient perception of the quality of nursing care and related health services. Validation was done at the leading health care institution—the National Hospital of Sri Lanka.

METHODS

Design, setting and participants

The study was conducted at the National Hospital of Sri Lanka (NHSL) during 2008. The NHSL is the

premier curative institution and the leading teaching hospital in Sri Lanka. It is a facility with 3,004 patient beds and the nursing care is provided by approximately 2,000 nursing personnel with varying duration of work experience. The study followed a cross-sectional design. Patients discharged after 3–90 days' stay from general medical and surgical units in the hospital were eligible for the study. University teaching units (Professorial Units) and patients who had been hospitalized with serious impairment were excluded.

Development of the instrument

We conducted an extensive literature search in all online biomedical databases to identify study instruments used to assess patient perception of the quality of nursing care. The search was extended to the Sri Lankan Health System Research databases, Postgraduate Institute of Medicine thesis collection, and local journals to recognize research conducted in the local setting. A conceptual framework indicating aspects to be inquired when assessing patient perceptions on quality of nursing care was developed based on this information. The following themes were included in the conceptual framework: interpersonal relationships between nurses and patients; efficiency in serving patients, competency of nurses in caring for patients; comforts provided in the ward, physical environment in the ward, cleanliness in the ward, provision of personalized information by nurses and provision of general instructions by the nurses. Following informal discussions with different levels of care providers and patients, we compiled an instrument with all possible items under each theme. Three categories of care providers, medical, nursing and attendants, and patients were involved in the discussions: The nursing categories ranged from the student nurses to administrative grades. All these persons were selected using nonrandom methods. The discussions were conducted at individual level by the 2 investigators using a structured guide after a briefing of the purpose of the study. The first discussion question was "what aspects of care do you think patients feel as important?" and then the discussions explored items under the themes in the conceptual framework.

Subsequently, we arranged a series of brainstorming sessions to select the most suitable items to be remained in the instrument. The participants for this session included 5 patients, 5 nurses, 3 medical officers and a panel of 3 experts in quality of care, an epidemiologist, a quality assurance consultant and a hospital administrator. The group of experts evaluated the items for content validity, conceptual clarity, and comprehensiveness. Consensus among experts on the above resulted in a 72-item instrument. This was developed into an interviewer administered instrument. Some of the items were negatively worded to avoid stereotype responses. The responses to items were assessed as either the level of satisfaction or agreement of the patient regarding the aspect of the quality of nursing care indicated in the item. The responses for each item to be marked using a 5-point Likert scale (1 = *Fully dissatisfied/disagreed*; 2 = *Somewhat dissatisfied/disagreed*; 3 = *Neither satisfied/agreed nor dissatisfied/disagreed*; 4 = *Somewhat satisfied/agreed*; 5 = *Fully satisfied/agreed*). For each item, the patients were offered the option of indicating whether it was *not relevant*.

Data collection

The patients were selected from 04 General Medical Units and 04 General Surgical Units through a systematic random sampling method and using a predetermined schedule. We anticipated that one-third of the 72 items in the initial questionnaire would retain for the factor analysis after excluding items which were not relevant, or having low item-total correlation. This number (24 items) was multiplied by 5 to ensure the subject-variable ratio not less than 5 for the factor analysis, and expanded further by 5% to adjust for nonresponses (Bryant & Yarnold, 1995). So, the final sample size was equal to 125 subjects.

The respondents were identified from the patient discharge registers in each ward over a period of 3 months. The interviewers with similar educational background were recruited and trained by the two investigators, specifically on selecting the respondents, obtaining consent, and the nature of setting the interview should be held. The interviewers were informed to ask questions about the level of

satisfaction/agreement in two stages: first whether or not the respondent was satisfied/agreed with the stated item, and then about the level of satisfaction/agreement or dissatisfaction/disagreement. During the training of data collectors, the co-investigators demonstrated how each question should be asked, and observed how each data collector was conducting a “mock” interview. It was emphasized that all the questions should be spelled out as stated in the questionnaire and the interviewers should be impartial and nonjudgmental during the interview. Trained interviewers administered the questionnaire to patients upon discharge, and the interviews were conducted in a setting ensuring the privacy and confidentiality. The interviewers were rotated across the patient wards during data collection in order to further minimize interviewer bias. The principal investigators re-interviewed 10 respondents for the assessment of inter-rater reliability between investigators and interviewers. By the end of 3-month period, 96% of the sample ($n = 120$) was successfully completed.

Ethics clearance was obtained from the Ethics Review Committee of the Faculty of Medicine, and the Ethics Committee of the NHSL (Reference no. AA/ETH/2008). Special permission was obtained from the Director NHSL and all specialists in charge of the wards included in the study.

Statistical analysis

Analysis of the items followed a systematic approach. First, the negatively worded items were reversed so that all the items in the questionnaire would have a uniform scoring system: i.e., *highly dissatisfied/disagreed* = 1; *dissatisfied/disagreed* = 2; *neither satisfied/agreed nor dissatisfied/disagreed* = 3; *satisfied/agreed* = 4; and *highly satisfied/agreed* = 5. Items with more than 20% *not relevant* responses were excluded, and for the remaining items, *not relevant* responses were replaced with mean of the respective item. The item analysis was performed to eliminate, inadequate variances and low item-total correlations. This was followed by a data-reduction technique, to minimize the number of items included in the final instrument. We used principal components factor analysis with a Varimax Rotation technique. Items which received

a loading less than .4 in any factor, or loaded on two different factors with a difference of factor loadings less than .2 were eliminated. Factor analysis was repeated until the factor structure remained stable. The reliability analysis was performed on the final instrument to assess the internal consistency as measured by Cronbach’s alpha. Inter-item correlation was also calculated between individual items.

RESULTS

Of the 120 respondents, 60% were from Medical and 40% from Surgical units. The majority were females (52.5%), aged 35 years or above (77.5%), educated GCE (O/L) and above (57.6%), and had previously been hospitalized (60.0%).

Of the 72 items in the questionnaire, 18 had greater than 20% *non relevant* responses, thus these 18 items were excluded. A further 11 items were eliminated since item-total correlations were less than .2. The remaining 43 items were entered into the first factor analysis, which identified nine factors, and explained 69.8% of the cumulative variation. Six items having loaded on two different factors with difference less than .2 were eliminated. During the second factor analysis which included the remaining 37 items, 8 factors were identified based on eigenvalue and only one item was eliminated due to loading on two different factors with less than .2 difference. This factor structure with 36 items classifying into eight factors was stable and considered as the final factor solution (Table 1). It was accounting for 70.6% of the cumulative variance indicating the adequacy of factors in describing patient perception on quality of nursing care (Table 2).

The eight factors were appropriately named as follows: Factor-1 “interpersonal care”, involving items about the way nurses interact personally with the patient such as respect, courtesy and concern; Factor-2 “efficiency”, involving items about adequacy of nurses and their actions to fulfill health needs without delay; Factor-3 “comfort” involving items about privacy and sleep; Factor-4 “sanitation” involving items about adequacy and cleanliness of washrooms; Factor-5

Table 1*Factor Analysis With Varimax Rotation Component Matrix*

Item	Factor loading by component							
	1	2	3	4	5	6	7	8
The way the ward staff welcomed	.742							
Care given by the nurses	.761							
Respect shown by the nurses	.854							
Courtesy of the nurses	.843							
Willingness of nurses to help when asked for help	.785							
The way nurses understood emotions and gave comfort during stay	.805							
Opportunity given to express concerns leisurely	.761							
The nurses' response to needs	.737							
Concern shown by nurses towards illness	.718							
Friendliness of nurses	.749							
Nurses treated me in a way that made me feel important	.792							
Nurses spent adequate time with me	.682							
The nurses gave me treatment/medicine without any delay		.772						
The nurses maintained records efficiently		.618						
Efforts taken by nursing staff to provide peaceful environment in the ward		.704						
Frequency of visits paid to me by the nursing staff		.707						
No. of nurses available for my care		.637						
The nurses maintain good coordination with other staff		.689						
Efforts taken by the nursing staff to minimize delay in performing investigations		.786						
Efforts taken for ensuring privacy during examination			.596					
Provisions for an un-disturbed sleep			.630					
The quality of the bed			.812					
The quality and cleanliness of bed linen			.840					
No. of bathrooms available				.808				
Quality of the bathrooms available				.852				
Cleanliness of the toilets				.807				
Information given on facilities available when first came to the ward					.761			
Information given by the nursing staff regarding the illness					.830			
Information given by the nursing staff on investigations					.806			
Ventilation of the ward						.815		
Lighting condition of the ward						.780		
Condition of the area provided to eat at the ward						.647		
Amount of information displayed at the entrance							.609	
The signs of direction for wards/labs							.778	
Nurses are competent								.659
Nurses are knowledgeable enough to answer my questions								.677

Note. Components were labeled as 1. Interpersonal care; 2. Efficiency; 3. Comfort; 4. Sanitation; 5. Personalized information; 6. Physical environment; 7. General instructions; 8. Competency.

Table 2*Total Variance Explained by Subscales by Principal Component Analysis*

Factor	Eigen value	% of variance	Cumulative %
1. Interpersonal care	10.44	28.99	28.99
2. Efficiency	4.32	12.00	40.99
3. Comfort	3.19	8.86	49.84
4. Sanitation	2.14	5.95	55.79
5. Personalized information	1.67	4.63	60.42
6. Physical environment	1.38	3.83	64.25
7. General instructions	1.23	3.41	67.66
8. Competency	1.09	3.01	70.67

Table 3*Correlation Matrix Showing Correlation Coefficients Between Factors, and Mean, SD and Internal Consistency of Factors*

	1	2	3	4	5	6	7	8	M	SD	alpha ^a
1. Interpersonal care									4.36	0.64	.94
2. Efficiency	.56								4.48	0.63	.89
3. Comfort	-.01	.06							3.72	0.93	.76
4. Sanitation	.05	.25	.38						2.99	1.19	.84
5. Personalized information	.03	.01	.30	.05					3.22	1.18	.77
6. Physical environment	.19	.45	.14	.34	.05				3.98	0.96	.76
7. General instructions	.11	.26	.22	.16	.35	.24			3.36	0.98	.53
8. Competency	.41	.22	.15	-.01	.24	-.02	.11		4.33	0.54	.37

^aInternal consistency measured by Chronbach's alpha; overall Chronbach' alpha = .91.

“personalized information” about hospital facilities, and illness; Factor 6 “physical environment” such as ventilation and meal area; Factor-7 “general instructions” about directions and sign boards in hospital and Factor-8: “competency” their knowledge and skills.

Correlational analysis was performed between mean satisfaction score of one subscale against the other subscales. The aim of this analysis was to find out whether any of the two subscales are related with each other. As shown in Table 3, most correlation coefficients were positive but weak ($r < .4$) indicating the uniqueness of each subscale. The mean subscale scores were relatively high for efficiency (4.48 ± 0.63), interpersonal care (4.36 ± 0.64), and competency (4.33 ± 0.54) and low for sanitation (2.99 ± 1.19). The internal consistency measured by Cronbach's alpha was greater than .75 in all individual constructs, except two subscales, general instructions and competency,

being .53 and .37 respectively. Internal consistency estimates for the final instrument was very high with an overall Cronbach's alpha of .91.

DISCUSSION

Many of the criteria considered in developing the present instrument were similar to those used in other settings during the process of developing instruments to assess perception of quality of nursing care (Dozier et al., 2001; Laschinger, Hall, Pedersen, & Almost, 2005; Lynn et al., 2007; Yildiz & Erdoğan, 2004). They were as follows: (a) reflect the degree to which patients met the needs, (b) limit burden to respondent, (c) able to be completed on discharge, (d) avoid reference to care expectations, and (e) is affected minimally by sociodemographic and ward specific

characteristics. In contrast to self-administered type of questionnaire used in many settings, we used an interviewer administered tool because this method would enhance the response rate, completeness of responses and eliminate the problem of inability to read.

Nursing care is always associated with underlying support services of hospital such as maintenance of cleanliness, ventilation and lighting in the wards, quantity and quality of beds, instructions displayed in and outside the wards, quality of meals and sanitary facilities. A multi-site study in medical-surgical units in 146 hospitals in the United States revealed that availability of support services have a significant impact on patient satisfaction with nursing care, because support services allow nurses to spend more time for direct patient care (Bacon & Mark, 2009). Nurses cannot provide optimal care to patient when these services are limited, for example facilities to maintain privacy during examinations and assuring comfort of patients. Some previous studies on patient satisfaction have also described the two concepts, the nursing care and relevant hospital services together. For example, the constructs in the study conducted in Turkey included hospital services such as nutritional care, room atmosphere, procedure of incoming patients, room cleanliness and other services such as cafeteria and parking (Yildiz & Erdoğan, 2004). During the informal discussions and the brainstorming sessions of the present study, it was agreed upon that the aspects of hospital services which are relevant to nursing care should also be included in the instrument.

Development of this instrument was based on the principle that determination of quality of nursing care must include the patients' and care givers perspectives. The conceptual framework based on available literature was useful to compile satisfaction items under each theme, and the subsequent informal discussions with patients and care givers were guided by these items. The aim of the informal discussions were to identify the items that patients or care givers perceive as important in assessing quality of nursing care. The brainstorming sessions that followed discussions helped to prioritize the items that should remain for the statistical analysis.

It was a strength in this study that we considered views of a wide range of persons including patients and care givers. The items in the initial instrument were grouped into several dimensions, such as interpersonal care, technical aspects, environment, cleanliness, accessibility, and adequacy of advice, according to existing literature and expert opinion. The majority of them retained within the same dimension after the final factor analysis. Items which were *not relevant* to more than 20% of the respondents were excluded. It was found that items related to instructions on follow-up care, such as giving advice on dietary modifications, insurance claims or job modifications were not relevant to a considerable number. Hence, if an item was not applicable to many, despite its importance, such an item may not contribute to overall perception of quality of care, and unsuitable for such a scale. Having items which are relevant to most would yield a higher overall response to the instrument. It is also a common practice to exclude the items that do not show a variation in responses, that is, if an item receives the same response by more than 90%. However, such items were not found in our instrument.

We used item analysis to see how each individual item correlates with the overall score. All items entered in the item analysis demonstrated a positive correlation indicating that there was some contribution by all items considered, however few items had a weak item-total correlation, for example items "there was not any discrimination due to reasons such as race, religion, or income", and "nurses introduced themselves to me". This instrument as a whole or its subscales demonstrated very high internal consistency (Cronbach's alpha > .75) which is a required psychometric property in a reliable instrument. The high internal consistency in the dimension of interpersonal care was notable indicating the reliability of that subscale to assess quality of nursing care. Of the eight subscales, the "competency" subscale showed a very low reliability (Cronbach's alpha = .37), indicating that the patients' perception were inconsistent about knowledge and competency of nurses. Thus, usefulness of this subscale to understand nurses' competency is limited though the respective items can

be present in the instrument for overall satisfaction with nursing care. Similar observation regarding the low reliability of the "general instructions" subscale (Cronbach's $\alpha = .53$) was found. This instrument will not serve as a tool in which satisfaction regarding individual aspects can be assessed.

The cumulative variation of the final factor solution was quite satisfactory, supporting the appropriateness of the constructs. The high factor loadings in the final solution indicated the suitability of the items to be included into the eight factors: "interpersonal care"; "efficiency", "competency", "comfort", "physical environment", "sanitation", "personalized information", and "general instructions". The highest number of items was loaded in the "interpersonal care", and many previous studies were in support of this (Lynn et al., 2007). Some of the items were "the way the ward staff welcome you when you first entered the ward", "nurses treated me in such a way which made me feel that I'm an important person" and "willingness of the nurses to help you when you asked for help" and so forth. Most items explain the psychological or emotional support that is required or expected from nurses by patient. Even though few items were present, there was a high factors loading in the dimension "sanitation" indicating the importance of this aspect. The mean scores of sanitation were remarkably low, and the health managers should concern about quality, quantity and cleanliness of bathrooms. The high mean scores in efficiency, competency and interpersonal care revealed that the patients perceived nurses as efficient, competent, and they were feeling cared for.

The main reason for developing a new tool for Sri Lankan setting was its unique sociocultural characteristics such as high level of contentment, equanimity and empathy among people. The items included as "interpersonal care" covered some of these concepts, for example, "the way nurses understood emotions and gave comfort during stay" and "opportunity given to express concerns leisurely" were related to empathy. The analysis of satisfaction scores revealed that, despite poor rating on sanitation, interpersonal aspects and efficiency were rated as high, giving rise to a higher overall satisfaction.

When compared the present instrument with those developed in other countries there were some common features as well as differences. The PAQS-ACV validated in the United States consisted of 44 items grouped into six factors and showed some similarities with the individual items in the present instrument (Lynn et al., 2007). For example, items showing the patient that she or he was important, nurses spending adequate time with patient, efficiency, knowledge and courtesy of nurses were present in PAQS-ACV. When compared with the PSNCQQ which was a 19-item scale used in Canada, there were many similarities in the items such as concern, courtesy, respect and friendliness of nurses as well as items related to nurses' skills, competence of nurses and response to patient needs (Laschinger et al., 2005). In contrast, the PPHEN used in the US had only a single factor of 15 items related to "caring" (Dozier et al., 2001). Within this single factor, there were few individual items that were similar to the present instrument for example, "willingness of nurses to help when asked for help" and "the nurses" response to needs". In contrast to many of the instruments used previously, the present instrument has taken into consideration more dimensions of nursing care and included some relevant hospital services as well. Thus a key strength of this instrument is the comprehensiveness of the scale that covers several dimensions of satisfaction, so that users can utilize it to identify deficiencies in wide range of care.

Validated scales have been used to identify predictors of patient perceptions on quality of nursing care including influence of patient and nurse characteristics (Han, Connolly, & Canham, 2003; Larrabee & Bolden, 2001). The present instrument may also be used to investigate into such predictors in order to recognize opportunities for improvement, in Sri Lankan teaching hospitals or comparable settings.

This study has some limitations. The sample did not cover units other than general surgery and medicine posing a limitation to wide applicability of the instrument. The interviews were conducted in the ward setting, and this would have prevented free expression of ideas related to nursing care to a lesser extent. The instrument contained 36 items which is

lengthier than instruments of previous investigators. Based on the patients' rating, it was found that mean scores of efficiency and competency were high although these two factors had lower factor loading. Therefore the relative importance of these two aspects on overall judgment regarding satisfaction could be low. This implies that there is no relationship between patients' rating on satisfaction items and their importance to be included in the scale. Further, two factors, general instructions and competency, had only two items each and a low reliability, limiting their applicability in the satisfaction scale.

CONCLUSION

In conclusion, using a systematic approach, we developed a comprehensive, internally consistent and valid 36-item instrument which contained eight constructs: interpersonal care; efficiency; competency; comfort; physical environment; sanitation; personalized information and general instructions. This instrument can be a useful tool for researchers and hospital authority to measure quality of nursing care and related hospital services in hospitals.

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