Comparing the Quality of Care

Between Conventional and Nonconventional Shifts

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Presented to the faculty of Lycoming College
in partial fulfillment of the requirements for Departmental Honors in Nursing.

April, 1996

Abstract

This study was conducted to determine whether there is a difference in registered nurses' perceptions of the quality of care they provide when working conventional shifts as compared to nonconventional shifts. The research question was: Is there a difference between the perceptions of quality of care provided by registered nurses (RNs) working conventional shifts as compared to nurses working nonconventional shifts?" This study took place at two campuses of a health system in central Pennsylvania. The sample (N = 31) consisted of 1.0 full-time equivalent (FTE) staff RNs working conventional shifts (N = 21) and nonconventional shifts (N = 10). The comparative-descriptive design enabled comparison between the two groups of nurses. The Quality of Nursing Care Questionnaire- Registered Nurse (NCQ-RN) (Safford, Schlotfeldt, and Bolcer, 1960) and a demographic questionnaire were used to collect the data. The NCQ-RN elicited information about the RNs' perceptions of the quality of care they provide. No information was found concerning the reliability and validity of this instrument. The demographic

questionnaire was designed to obtain information regarding background information on the subjects as well as information on the number and degree of current stressors in the subjects' life. Using the Mann-Whitney rank sum test, there was no significant difference ($p = 0.0990$) in the overall quality of care given by nurses working conventional shifts when compared to those working nonconventional shifts. However, a statistically significant difference was found in the emotional subscale of quality of care, with the nonconventional shift nurses scoring significantly higher than the conventional shift nurses. Therefore, it is concluded that the type of shift worked does not affect the overall quality of nursing care, however, the emotional care provided may be of higher quality in nurses working nonconventional shifts. Implications of this study lie mostly in the scheduling of staff nursing shifts. Since overall quality of care was shown to be equal despite the type of shift worked, staff nurses can work their preferred shifts without negatively affecting the quality of care given to their patients. However, since emotional care was found to be lower in conventional shifts, in-

services and continuing education on building therapeutic relationships may be beneficial in improving this area.

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CONVENTIONAL AND NONCONVENTIONAL SHIFTS

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Chapter I: Introduction

Today, while many American hospitals are restructuring and implementing cost-cutting measures, many nonconventional shifts for nursing staffs are being utilized. Ten-, twelve-, and even sixteen-hour shifts, along with mandatory overtime, are some of the strategies being implemented. The longer scheduled shifts are often viewed as a mutual benefit for hospitals and the nurses they employ. The exchange of extra days off for a longer workday is appealing to many nurses, consequently reducing turnover rates and institutional expenditures (Palmer, 1991). However, mandatory overtime with no "extra" days off has the potential to cause disgruntled and fatigued employees and, therefore, adversely affect the quality of nursing

care provided.

While some of the longer, nonconventional shifts may seem reasonable for the hospital and nurses, they may not be in the patient's best interest. The likelihood of fatigue increases as the workday lengthens, potentially affecting not only physical nursing duties, i.e. procedures, treatments, etc., but also the care and planning of clients' psychosocial needs (Todd, Reid, & Robinson, 1993).

The question arises as to whether there are significant differences in the way nurses plan and implement care when working a longer shift when compared to a shorter workday. This study was conducted to determine whether there is a difference in registered nurses' perceptions of the quality of care they provide when working conventional as compared to nonconventional shifts. The resulting research question is: "**Is there a difference between the perceptions of quality of care provided by nurses working conventional shifts when compared to nurses working nonconventional shifts?**"

Since the terms "conventional shift" and

"nonconventional shift" are used extensively in this study, it is important that they be defined. A conventional shift in this study consists of five eight-hour work days per week, with overtime not exceeding four hours per week. A nonconventional shift is any work hours that do not fit the criteria of a conventional shift, but are not less than those of a conventional shift. Examples of nonconventional shifts include ten-hour, twelve-hour, and sixteen-hour shifts in any combination that totals at least forty hours per week. Nonconventional shifts also include shifts worked by those individuals who are budgeted for a conventional eight-hours per day, five-days per week schedule, but who work overtime in excess of four hours per week.

The term "nurse" also needs to be defined. A nurse is one who is "trained in the scientific basis of nursing... and is concerned with the diagnosis and treatment of human responses to actual or potential health problems" (Hensel, 1990, p. 369). Specifically, a registered nurse is a nurse "who has been registered and licensed to practice by a state authority" (Hensel,

1990, p. 370).

The nurses used as subjects in this study were 1.0 full-time equivalent (FTE) employees. A 1.0 FTE employee is an employee who works at least 80 hours per pay period.

By far, a more vague term to define is "quality of care." Quality of care in this study is interpreted as the standards and practices by which health care professionals abide in order to provide an optimal degree of excellence in the services rendered to every patient. Quality of care is measured by the Quality of Nursing Care Questionnaire - Registered Nurse by Safford, Schlotfeldt, and Bolcer (1960).

This study utilized a comparative-descriptive design to examine and describe differences in quality of care between nurses working conventional shifts when compared to those working nonconventional shifts. The results were analyzed using the Mann-Whitney rank sum test.

A limitation existed in this study due to the way in which quality of care was measured. In this study, the nurses evaluated their own care. This self-report

method of assessing quality of care may have produced results different from those of a third-party evaluator of the care provided by these same nurses.

Another limitation resulted from the non-probability sampling design utilized in this study. By virtue of this design, the sample consisted of those who volunteered to be in the study. The question arose, then, as to the reasons someone did or did not choose to participate in the study and whether these reasons influenced the validity of the results.

Another limitation existed in this study due to the lack of randomization that resulted from the non-probability sampling design utilized. The lack of randomization limits the generalizability of the findings to the population being studied.

A final limitation in this study resulted from the limited number of hospital units represented in this study. Only two types of units in the hospital, medical-surgical and adult critical care, were represented by the nurses in this study. Therefore, other specialty areas, such as obstetrics and pediatrics, were not represented.

Several assumptions were made when conducting this study. The first assumption was that the nurses would be honest in their responses. The second assumption was that nurses want to provide high quality nursing care, and the final assumption was that variations in shift length are primarily used for recruitment and retention purposes and not for the purpose of increasing or decreasing the quality of nursing care provided.

Two theories served as a foundation for this study. Callista Roy's adaptation model, augmented by Eleanor Gibson's theory on perceptual learning, served as the theoretical basis for the research. These theories are explored in Chapter II.

This research is significant to nurses in all facets of health care, but is of particular importance to those working in the clinical setting. The results may heighten nurses' awareness of the influences of shift length on quality of care. In turn, clinical nurses may take measures to ensure that high quality care is given, regardless of the length of the workday.

Nurses other than staff nurses will find this

information useful as well. Nursing administrators can use the results of such research in formulating plans to provide high quality patient care using cost-effective resources. Also, nursing researchers may use the data collected in this study to validate or refute previous studies. Finally, nursing educators can introduce students to quality of care issues related to shift length.

The next chapter of this paper reviews the literature concerning shift length and overtime as they relate to nursing care. Previous studies and their respective conclusions concerning the effectiveness of different shift lengths are examined.

Chapter II: Literature Review

Review of Literature

This study was conducted to determine whether there is a difference in registered nurses' perceptions of the quality of care they provide when working conventional shifts as compared to nonconventional shifts. This chapter investigates previous studies concerning eight- and twelve-hour shifts, as well as overtime and double shifts, and examines the conclusions drawn from those studies.

An in-depth literature review revealed a paucity of information concerning nurses working overtime and double shifts and the effect that these longer hours may have on patient care. However, there has been a renewed interest in studying the effects of twelve-hour shifts, particularly for general nursing staffs (Todd,

Reid, & Robinson, 1989). The review of literature, therefore, concentrates mainly on the effects of eight- and twelve-hour shifts, with a few references to overtime and double shifts.

Some obvious benefits exist for hospitals and nurses by using the twelve-hour shift system. One benefit is the reduction of the overlap between shifts and the potential financial savings for the institution (Todd, Reid, & Robinson, 1991). In addition, the twelve-hour shifts may appeal to some nurses because they offer potentially more leisure time in the form of more days off and also decrease the hours spent traveling to and from work (Nazarko, 1994). The most recent reports on twelve-hour shift work seem to be evenly split over the issue of whether this shift is beneficial to patients as well as to staff nurses.

In theory, the twelve-hour shift could enhance patient care. Nurses continually strive to improve patient care by individualizing plans to meet each patient's specific needs. Palmer (1991) theorizes that nurses could better meet these needs under the twelve-hour shift system because fewer nurses are assigned to

a given patient, yielding a better appreciation of that patient's needs. Northcott and Facey (1995) support this claim. They found that with twelve-hour shifts, each patient is cared for by only two nurses in a twenty-four hour period which ensures a greater accomodation of the patients' needs in the plan of the day. The same could be said, then, for sixteen-hour, or double, shifts which would also reduce the number of nurses who care for a patient in a given time period.

Other researchers, however, have made a case against twelve-hour shifts with regard to patient care. A study conducted by Todd and associates (1991), for instance, involved repeated measures on ten in-patient wards in two hospitals. The repeated measures design allowed for collection of data before, and six months after, the introduction of the twelve-hour shift, permitting direct inferences to be made regarding the effect of the shift on the same floors of the hospitals. The study found that the quality of care provided was statistically significantly poorer under the twelve-hour shift system when compared to the eight-hour shift system (Todd, Reid, & Robinson, 1991).

One of the major issues in the controversy over twelve-hour shifts, and double shifts as well, is the potential for fatigue of the nurses which could contribute to a decrease in quality of patient care. In the study conducted by Washburn (1991), analysis of the fatigue scores as well as subjective symptoms of fatigue revealed no significant differences between nurses on the eight- and twelve-hour shifts. The article did not go into depth as to how the data was analyzed; however, information was given concerning how symptoms of fatigue were categorized.

Symptoms of fatique were divided into three broad categories: drowsiness and difficulty in concentration, drowsiness and projection of physical symptoms, and difficulty of concentration and projection of physical symptoms (Washburn, 1991). The fatigue scores were based on a scale of 0 to 30 with 30 indicating the highest level of fatigue. The results showed mean fatigue scores of 8.4 in the last hour of eight-hour shifts and 8.7 in the last hour of twelve-hour shifts which, as previously stated, was not significantly different (Washburn, 1991).

Another study which examined fatigue scores was conducted by Todd and associates (1993). These researchers found that nurses working the twelve-hour shift reported becoming progressively more tired from a mid-day peak to the end of the shift. In order to conserve their energy, those nurses who knew they were going to be working all day paced their work from the very beginning (Todd et al, 1993).

The issue of fatigue influencing the quality of patient care is also important when addressing the overtime work of staff nurses. In a study by Roseman and Book (1995) concerning workload and environmental factors in hospital medication errors, one factor found to be related to the errors was the number of shifts of overtime regular staff members worked.

The type of unit on which a nurse works has been shown to be a factor in the development of fatigue in eight- and twelve-hour shift work. Medical/surgical nurses have a tendency to show a higher level of fatigue than critical care nurses (Washburn, 1991). One reason for this high level of fatigue is the larger number of patients for whom the nurses are responsible

along with the greater distances between patients and supplies. Also, the intensity of care required by patients on medical-surgical units has been increasing which affects workloads and, therefore, fatigue (Washburn, 1991).

Another aspect in the difference in quality of care between eight- and twelve-hour shift workers focuses on the type of care that is most affected. In the study by Todd and associates (1989), the MONITOR index was used to evaluate quality of care. The MONITOR system scores are based on questions from four scales: Scale A assesses the planning of nursing care for the patients, scale B assesses the degree to which patients' physical needs are met, scale C assesses the degree to which patients' non-physical needs are met, and scale D assesses the way in which nursing care objectives are evaluated (Todd et al, 1989).

Results of this study suggest that there is a lower quality of nursing care provided under the twelve-hour shift than under the eight-hour shift (Todd et al, 1989). Specifically, the planning of nursing care ($p = 0.0469$), the caring for patients'

psychosocial needs ($p = 0.0218$), and the way in which nursing care objectives are evaluated ($p = 0.0125$) were all significantly poorer on the twelve-hour shift system. Meeting patient's physical needs, however, did not differ significantly between the eight- and twelve-hour shift system (Todd et al, 1989).

The amount of care patients needed also was a factor which influenced quality of care. Each of the patients on the ward were categorized into one of four dependency groups. Category I patients required minimal care, category II patients required an average amount of care, category III patients required an above average amount of care, and category IV patients required maximum care. When considering the dependency categories of the patients in relation to the delivery of physical care, significant decreases were found under the twelve-hour shift for patients in the higher dependency categories (Todd et al, 1989). In a more recent study done by Todd and associates (1991), higher dependency patients were again shown to be the most adversely affected in twelve-hour shifts.

A final aspect in the quality of care issue

between eight- and twelve-hour shifts is the job satisfaction of the nurses working these shifts. Palmer (1991) explains that having four days off each week has many advantages: parents are provided with more days off to spend with their children, students have more days off for classes and homework, and still others have a better opportunity to get a second job if needed. The authors of this study go on to state that job satisfaction increases when nurses have more control over their schedules (Palmer, 1991). Contrastingly, Todd and associates (1991), showed that nurses working the twelve-hour shift were significantly less satisfied (intrinsically and extrinsically) than were nurses who worked in the eight-hour shift system.

As seen from the many previous examples, the twelve-hour shift has shown itself to be neither exceptionally positive nor completely negative with regard to quality of care. Therefore, it is hypothesized that there will be no difference in the quality of care as perceived by RNs working conventional when compared to nonconventional shifts.

The following section of this chapter explains the

theoretical foundation of this study. Roy's Adaptation Theory and Gibson's Perceptual Learning Theory served as the framework for the study.

Theoretical Framework

Nurses working longer shifts are exposed to different environmental conditions than those working shorter shifts. Longer shift workers must draw on past experiences in order to be able to adapt to the longer hours. In this investigation, two theories serve as a foundation for this study, Roy's Adaptation Theory and Gibson's Perceptual Learning Theory.

Roy's Adaptation Theory is one theoretical basis for this research. Roy's theory describes a person as an adaptive system having regulator and cognator coping mechanisms that act through four adaptive modes. These adaptation modes consist of one biological and three psychosocial modes. Roy states that these four modes are interrelated, and a change in one may have an effect on any or all of the other modes (Roy & Roberts, 1981).

The biological mode, called the physiological mode, is concerned with maintaining physical and

physiological integrity of the human system. This mode includes such things as exercise, rest, and regulation which includes the senses, temperature, and endocrine regulation. The psychosocial modes of adaptation includes the self-concept mode, role function, and interdependence. The self-concept mode is a composite of beliefs and feelings that one holds about oneself at a given time. The role function is concerned with performance of duties based on given positions in society. Finally, the interdependence mode involves relations with significant others and support systems (Roy & Roberts, 1981).

Roy describes environment as any conditions and influences that surround and affect the development and behavior of persons. Environment is constantly changing with both internal and external components which are sources of input into the adaptive system. The changing environment represents new challenges for the person and stimulates the person to make responses (Roy, 1984). For example, exercise and rest are two components that are vital to the well-being of an individual who strives for a balance between the two.

This balanced ratio may be altered, however, due to stressors that increase exercise and decrease rest (Roy & Roberts, 1981). This alteration prompts the person to make some adaptation to compensate for the imbalance.

According to Helson (1964), adaptation is a process of responding positively to environmental changes. Positive responses decrease the response necessary to cope with stimuli, while increasing sensitivity to other stimuli. Adaptation problems occur, however, in changing environments. The projected outcome is an adapted state which frees the person to respond to other stimuli which then promotes healing and wellness (Roy & Roberts, 1981). The goal of this model, therefore, is promoting adaptation to lead to higher-level wellness.

A related theory which comes from the psychological literature is **Eleanor Gibson's theory on perceptual learning**. Gibson describes perceptual learning as "an increase in the ability to extract information from the environment as a result of experience and practice with stimulation coming from

it" (Gibson, 1969, p. 3). Gibson states that there is structure in the world and structure in the stimulus, and it is the structure in the stumulus that gives one information about the world (Gibson, 1969). An important distinction is made between objects and the stimulation that comes from these objects. Perception does not deal with the stimulus, but rather the objects themselves. A stimulus carries with it information only if the object is examined and understood. It is the extraction of this information that characterizes perception. Perceptual learning, then, is characterized by an increasing ability to extract this information (Gibson, 1969).

Since perceptual learning deals with the ability to extract information, experience is a factor which comes into play. One is able to analyze an object more accurately after having had experience in comparing and contrasting the object with others of varying degrees of difference. A person is then able to detect different patterns or properties of the object which may not have elicited a response previously (Stevenson, 1972).

Knowledge of the content of Roy's Adaptation Theory and Gibson's Perceptual Learning Theory and an interest in conventional and nonconventional shiftwork led to a project which evaluates nurses' perceptions of the quality of care that is given to patients in the different environmental situations. Gibson's theory is relevant in that nurses will perceive quality of care differently depending on their past experiences and present environments. For example, the different aspects of nursing that were stressed at their respective schools, individual beliefs and values, or peer influence will all be factors affecting the nurses' perceptions of quality of care. As mentioned before, Roy (1981) states that changing environments force a person to make adaptations. It is the researcher's concern that these adaptations may effect the quality of care provided by nurses working conventional and nonconventional shifts.

In summary, longer shifts, twelve-hour shifts in particular, have proven themselves to be neither completely positive nor negative. This study was conducted to examine the quality of nursing care

related to variations in shift length. Roy's Adaptation theory and Gibson's Perceptual Learning theory have provided the theoretical groundwork for this study.

Chapter three of this paper explains the methodology used in conducting this study. The instrument and the procedures used to carry out this study are explained in detail.

Chapter III: Methodology

Design

This study was conducted to examine whether there is a difference in registered nurses' (RNs) perceptions of the quality of care they provide in nurses working conventional when compared to nonconventional shifts. The comparative-descriptive design used in this study was chosen because it "examines and describes differences in variables in two or more groups that occur naturally in the setting" (Burns & Grove, 1993, p. 294). This study compared the two groups of RNs, conventional and nonconventional shift workers, to see if there is a difference in their perceptions of the quality of nursing care they deliver. In addition, descriptive studies were designed to provide more information about certain characteristics within a

particular field of study (Burns & Grove, 1993). This information can then be used to further research in that field.

Setting and Subjects

Data for the current study was obtained at two campuses of a health care system in central Pennsylvania. The subjects in this study (N = 31) were 1.0 full-time equivalent (FTE) staff nurses, who worked conventional shifts (N = 21) and nonconventional shifts (N = 10). This resulted in representation from medical-surgical and adult critical care units. No nurses who worked in specialty areas met the criteria for inclusion in this study.

Procedure

A pilot study was conducted with a small number of subjects to test the proposed research plan. The pilot study was conducted at a tertiary care facility in central Pennsylvania.

Pilot Study.

Registered nurses (RNs) (N = 19) who worked eight- or twelve-hour shifts comprised the sample in this study. The RNs were staff nurses employed on the adult

critical care, pediatric, medical-surgical, and pediatric critical care units of the hospital.

Following approval by the hospital's research committees and institutional review boards, the sample was obtained from this conveniently selected setting using a stratified random sampling procedure. The two shifts served as the strata. Stratified random sampling was used to ensure adequate representation from both groups of nurses. A list of all RNs working eight-hour shifts and a list of all RNs working twelve-hour shifts was obtained from the nursing office and twenty nurses were randomly selected from each list using a table of random numbers.

After the sample was selected, the instrument, including a demographic survey, and a copy of the Letter of Consent were placed in each subject's hospital mailbox by the researchers. The instrument, Quality of Nursing Care Questionnaire - Registered Nurse by Safford, Schlotfeldt, and Bolcer (1960), was a questionnaire that elicited information on an RN's perception of the quality of nursing care he or she provides. The demographic survey elicited information

on factors that may influence the quality of care provided by the RN.

Subjects were asked to return the completed forms to an envelope marked "Quality of Care Study" which was placed in the locker room of each nursing unit. All envelopes were retrieved by the researchers, and the data was tabulated. The data was analyzed using the Mann-Whitney rank sum test with a 0.05 level of significance. The BMDP statistical software package was used. A doctorally prepared statistician served as consultant to the study. The results showed no difference in the quality of care provided by RNs working eight- as compared to twelve-hour shifts.

Current Study

As a result of some of the difficulties encountered when performing the pilot study, the study was altered slightly. In the pilot study, the researchers found it difficult to find nurses who worked either all eight- or all twelve-hour shifts. Many nurses worked a combination of these shifts along with double shifts and overtime. Therefore, the study was altered to investigate the quality of nursing care

provided by nurses working conventional (mainly eight-hour shifts) and nonconventional (twelve-hour, double shifts, overtime, etc.) shifts.

In addition, instead of dividing the population into the two groups of nurses beforehand and randomly selecting separately from these two groups, a list of all 1.0 FTE staff RNs was obtained and all nurses who fit this criteria were selected for the sample. Since the demographic questionnaire was used to elicit information on the type of shift the RN worked, RNs were placed into the conventional or nonconventional category after the questionnaires were returned.

In the current study, a letter describing the study and requesting permission for research along with a copy of the instrument and research proposal was sent to the Vice President of Patient Care Services of these two hospitals (see Appendix A).

Following verbal approval and permission to conduct the study by the Vice President of Patient Care Services, the sample was conveniently selected and consisted of all 1.0 full-time equivalent (FTE) staff RNs at both hospitals. The list of 1.0 FTE staff

nurses (N = 134) employed by the hospital was obtained from the nursing office. A personal visit was made by the researcher to each of the patient care managers on the units represented by these nurses in order to describe the study and distribute the questionnaires.

The instrument and a copy of the Letter of Consent was provided for each nurse who fit the specified criteria (see Appendix B). These items were given to the patient care manager to distribute. The Letter of Consent explained the purpose of the study, described the research procedures, indicated that confidentiality would be maintained, and described the right of the subject to refuse to participate or to withdraw from the study. The Letter of Consent also stated that the subject's return of the completed questionnaire constituted his/her consent to participate in the study. The researcher's phone number was given in case more information was needed or if questions arose about the study.

Subjects were asked to return the completed forms no later than March 2, 1996. An envelope marked "Quality of Care Study" was placed on each unit.

Participants were asked to place their completed forms in the envelope. All envelopes were retrieved on March 3, 1996 by the researcher, the questionnaires were grouped according to conventional or nonconventional shift qualifications, and all data were tabulated and subsequently analyzed. The data were analyzed using the Mann-Whitney rank sum test with a 0.05 level of significance. The BMDP statistical software package was used.

Instrumentation

The **demographic survey** used in this study was part of the questionnaire sent to the selected subjects. The survey elicited information on the average number of hours the RN works per day along with the average number of days worked per week (see Appendix C). Several nominal, ordinal, and continuous variables were also included. Variables such as sex, age, and race were represented on the survey. Two variables that were related to fatigue level were: 1) average number of hours of sleep per night and 2) major stress-inducing events within the last year (i.e. death of a loved one, divorce, moving, etc.).

The categorical data was then coded for entry into a BMDP data file. For example, the variable "race" included five categories, and each was assigned a numerical value: Caucasian = 1, African-American = 2, Hispanic = 3, Native American = 4, Asian = 5, Other = 6. Other categorical data was treated in a similar fashion. If the data from the demographic questionnaire was incomplete or missing, the subject was not eliminated from the study as long as a completed Quality of Nursing Questionnaire was returned. In the case of missing demographic data, the question was just left blank.

The instrument used in the current study, the same as that used in the pilot study, was the Quality of Nursing Care Questionnaire - Registered Nurse by Safford, Schlotfeldt, and Bolcer (1960) (see Appendix D). The instrument was developed to provide information on the relationship between hospital staffing patterns and registered nurses' perceptions of the quality of nursing care provided for patients. The items were developed by a committee which consisted of nursing and hospital administrators, nursing school

faculty, staff physician, head nurses, patients, and the authors of the questionnaire. The various groups of persons identified above were asked to indicate what factors were important to good nursing care and to provide examples of each. These responses were recorded to form statements that could be responded to by registered nurses (Safford, Schlotfeldt, & Bolcer, 1960).

Originally, this tool consisted of forty-nine questions. A panel of three experts was consulted to ensure that the terminology in the instrument was appropriate for present day use. As a result, two questions were eliminated because they were outdated and were no longer applicable to today's staff nurse. Since the instrument was thirty-five years old, the terminology used in many of the questions was also outdated, and the wording, therefore, was made more applicable to today's language. The tool, in its final form, consisted of forty-seven questions and took approximately ten to fifteen minutes to complete.

The Quality of Nursing Care Questionnaire elicited information on seven variables that addressed a

registered nurse's perception of the quality of nursing care provided for patients in a hospital setting. Six of these variables were as follows: physical care, emotional care, nurse-physician relationship, teaching and preparation for home care, administration, and quality of care. The seventh variable was not named, but sought information regarding the degree of satisfaction expressed by a registered nurse concerning the nursing care provided for a group of patients.

No information was available regarding the reliability and validity of the tool. However, the face validity of the tool was established by the same panel of three experts previously mentioned, each of whom hold at least a master's of nursing degree. They determined by examining the instrument that it did appear to measure a nurse's perception of the quality of care.

Treatment of Data

Data from the Quality of Nursing Care Questionnaire - Registered Nurse was scored in subgroups of questions in accordance with directions from the survey developers (Safford, Schlotfeldt, &

Bolcer, 1960). Each subgroup of questions, identified by one of the letters A through F measured a specific variable: subgroup A = physical care, group B = emotional care, group C = nurse-physician relationship, group D = teaching and preparation for home care, group E = administration, and group F = quality of nursing care. A summary question measuring the degree of satisfaction expressed by an RN concerning the nursing care provided was included as a separate variable.

The ranges for each subgroup score were as follows (low-high): Subgroup A = 13-65, subgroup B = 15-75, subgroup C = 2-10, subgroup D = 4-20, subgroup E = 10-50, and subgroup F = 2-10. A high score on a subgroup indicated favorable nurses' perceptions on that particular variable. In contrast, a low score on a subgroup meant that the nurses' perceptions were not favorable about that particular variable. Similar group scores for nurses working different types of shifts support the hypothesis that there are no differences in the quality of care as perceived by registered nurses working conventional as compared to nonconventional shifts.

Scores for each variable on the nursing care questionnaire were derived from categorical responses that were arranged on a Likert-type scale. There were five response category choices with a number assigned to each choice. The choices and their corresponding numerical values were: Never = 1, Seldom = 2, Sometimes = 3, Usually = 4, Always = 5. Unanswered questions were assigned a numerical value of "3" as instructed by the survey authors.

Group respondent scores were compared for each subgroup variable A through F using the Mann-Whitney rank sum test. This nonparametric test was used to compare the averages from the group of conventional shift nurses with the group of nonconventional shift nurses.

The scores obtained for each subject were recorded along with their corresponding demographic characteristics for comparison purposes. Each survey and demographic sheet was coded in the upper left corner with a three-digit number before distribution (i.e. 001, 002...). This was done primarily to maintain the confidentiality of the subjects as no

names were used for the purposes of this investigation. If more than five responses were missing on the Quality of Nursing Care Questionnaire questionnaire, the subject was eliminated from the study. A doctorally prepared statistician served as consultant to the study.

In summary, the methodology of this study was similar to that of the pilot study conducted previously. Several changes were made as a result of difficulties encountered in the pilot study as well as the different requirements for research of the different health care systems utilized.

Chapter IV deals with the results of this study. The results reported include significance levels, mean scores, and standard deviations with tables and figures included for clarity.

Chapter IV: Analysis of Findings

The results of this study, which examined whether there was a difference in registered nurses' perceptions of the quality of nursing care provided among conventional and nonconventional shift workers, were analyzed. The findings indicated that the research hypotheses was supported: There is no significant difference ($p = 0.0990$) in the registered nurses'(RNs') overall perceptions of the quality of nursing care provided when working conventional as compared to nonconventional shifts. There was one exception, however. A significant difference ($p = 0.0263$) did exist in the emotional care subscale with the nonconventional shift workers scoring statistically significantly higher than conventional shift workers (see Table 4.1). Also, two of the subscales approached significance: nurse-physician relationship ($p = 0.0869$) and satisfaction ($p = 0.0688$).

Table 4.1

Table of Means

Subscore Variable		Subscore Mean	Standard Deviation	P-value
Physical Care	C	51.8095	3.5863	0.4561
	N	53.2000	4.4422	
Emotional Care	C	55.5714	6.0131	0.0263
	N	61.0000	4.6904	
Nurse-Physician Relationship	C	7.2850	0.8452	0.0869
	N	7.9000	0.9944	
Teaching/Prep for Home Care	C	13.9048	1.9640	0.2629
	N	14.6000	2.6750	
Administration	C	37.9048	3.0968	0.6866
	N	38.2000	6.1608	
Quality of Care	C	8.0952	1.0911	0.5080
	N	8.4000	0.9661	
Satisfaction	C	3.9524	0.3842	0.0688
	N	4.3000	0.6749	

KEY
C = conventional shift nurses N = nonconventional shift nurses

One explanation for only one subscale showing a statistically significant difference is the nurses were rating their own caregiving, and most nurses believe that they give consistently high quality nursing care. This translates into high scores on the subscales, and

therefore, nonsignificant findings.

The difference in the emotional care subscale scores between the two groups of nurses may be due to the longer amount of time the nonconventional shift workers are employed each shift. The nonconventional shift workers work for more hours at a time than the conventional shift workers. This increase in hours may give them an "edge" on developing therapeutic relationships with the patients and, consequently, understanding and providing for their emotional needs.

The sample population in this study (N = 31) represented 23% of the possible subjects. This is below the usual response rate on questionnaires which is 25-30% These subjects represented the following areas: 51.6% medical-surgical and 48.4% adult critical care. Descriptive statistics were used to summarize the demographic variables (see Table 4.2).

In order to statistically analyze the data to answer the research question, the Mann-Whitney rank sum test was used. The conventional and nonconventional groups were compared on each of the seven variables. These variables were represented by subscales A through

Table 4.2

Demographic Data

Demographic Variable	Conventional Shift RNs	Nonconventional Shift RNs
Sex	female- 19 (90.5%) male- 2 (9.5%)	female- 8 (80.0%) male- 2 (20.0%)
Age	mean- 34.4 years	mean- 37.8 years
Race	Caucasian- 21 (100%)	Caucasian- 10 (100%)
Unit	Med-surg- 13 (61.9%) Adult ICU- 8 (38.1%)	Med-surg- 3 (30.0%) Adult ICU- 7 (70.0%)
Years on Unit	mean- 6.64	mean- 3.95
Years on Other Units	mean- 6.28	mean- 8.95
Marital Status	married- 13 (61.9%) single- 7 (33.3%) divorced- 1 (4.8%)	married- 9 (90.0%) single- 1 (10.0%) divorced- 0 (0%)
Number of Children	mean- 1.1	mean- 1.6
Hours of Sleep	mean- 6.1 hours	mean- 7.0 hours
Stress in Last Year	yes- 13 (61.9%) no- 8 (38.1%)	yes- 4 (40.0%) no- 6 (60.0%)
Number of Stress Events	mean- 1.2	mean- 0.9

F on the instrument plus a summary question on the nurse's degree of satisfaction with their quality of nursing care: Group A= physical care, group B= emotional care, group C= nurse-physician relationship, group D= teaching and preparation for home care, group E= administration, and group F= quality of nursing

care. Subscore means, standard deviations, and p-values were calculated in order to analyze the data (see Table 4.1). The subscore means were translated into percentages by dividing the maximum score possible for each subgroup by the actual subgroup mean for easier comparison of the two shifts (see Figure 4.1).

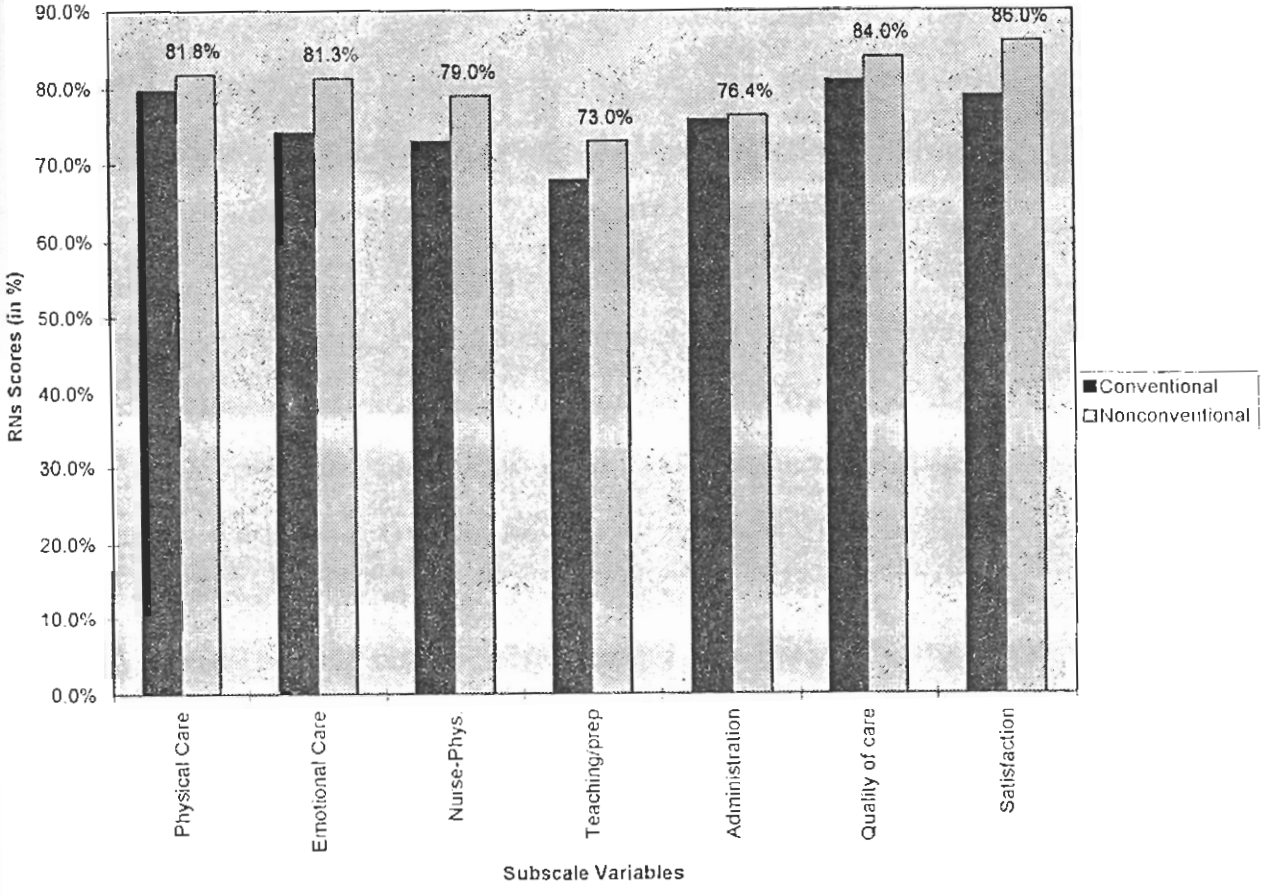

Figure 4.1. Comparison of Conventional and Nonconventional Shifts by Subcale Scores

In an effort to determine if fatigue was a factor for nurses in the current study, the researcher included several fatigue-related questions on the demographic survey. One question asked for the average number of hours the subject sleeps per night (see Appendix C). Although the nonconventional shift nurses slept an average of 0.9 hours longer than the conventional shift nurses, the scores were not statistically significantly different ($p = 0.1138$).

Another factor that may influence fatigue is stress. Fifty-five percent of the subjects, eleven conventional and six nonconventional shift nurses, reported experiencing at least one stress-related incident during the past year. Examples of stress-related incidents were provided on the demographic survey (see Appendix C).

Previous studies concerning quality of nursing care provided by nurses working different shift lengths, mainly eight- and twelve-hour shifts, revealed mixed results. None of the studies reviewed used the same tool that was used in this study. One study by Washburn (1991) used a fatigue scale. Her findings

revealed no significant difference in levels of fatigue between RNs who work eight- or twelve-hour shifts. Washburn did report, however, that medical-surgical nurses have a higher level of fatigue than other nurses when working twelve-hour shifts.

Todd, Reid, and Robinson (1991), on the other hand, found little justification for introducing twelve-hour shifts into nursing schedules. These researchers used the MONITOR index which reviewed quality of care based on actual observations, chart documentation, and patients' perceptions. Four main points were cited: 1) quality of care was statistically significantly poorer under the twelve-hour shift system as compared to the eight-hour system; 2) higher dependency patients were most adversely affected by twelve-hour shifts; 3) less amounts of patient education was done during twelve-hour shifts; and 4) patients expressed negative views about nurses' fatigue levels during twelve-hour shifts.

Results of this researcher's study of nurses' perceptions of quality of care differs greatly from the study by Todd and associates (1991). Because the

nonconventional shift workers, as defined by this study, were those nurses who work longer hours or more overtime, they are comparable to the twelve-hour shift workers used in the study by Todd and associates (1991). Not only were the nonconventional shift workers not significantly poorer as far as the quality of nursing care subscales were concerned, they actually scored statistically significantly higher in the emotional care subscale. The difference in the results of the two studies may be due to the type of data collected.

Todd and associates (1991) gathered objective data by looking at chart documentation and observations by others. In addition, subjective data concerning the patients' perceptions of the nurses' fatigue levels was also collected. The current study collected only subjective data through the nurses' own perceptions of the quality of care they provided. As mentioned previously, many nurses believe they always give high-quality care and, therefore, may have rated their care higher than it actually was. Also, the nurses may have responded in a "socially expected" manner rather than

in a way that reflected their true perceptions of the quality of care they provided. Credibility is increased when information is gathered using more objective data such as documentation and/or evaluation from others.

The results of this study, therefore, found a statistically significant difference in the emotional care subscale of quality of care when comparing conventional and nonconventional shift nurses' perceptions of quality of care. However, no difference was found in the RNs' overall perceptions of the quality of nursing care provided when working conventional as compared to nonconventional shifts. These findings are inconsistent with previous research which found quality of nursing care to be either significantly higher or significantly lower on longer, nonconventional shifts.

Chapter V discusses the results of this study. Implications for nursing practice, nursing research, and nursing administration are addressed.

Chapter V: Discussion: Conclusions and Implications

This study compared registered nurses' perceptions of the quality of care given by these same nurses working conventional and nonconventional shifts. Results indicated that there are no statistically significantly different results in six of the seven subscales of the Quality of Nursing Care tool. The length of shift worked by the nurses did not appear to affect such things as physical care and and health teaching along with the other subgroup variables.

Several aspects of this study may have influenced the results and may need to be altered in subsequent studies. First, the nurses in this study evaluated their own care which may have caused them to skew the

results positively or negatively depending on their individual opinions. Other ways of measuring quality of care that would not involve the nurses' perceptions of themselves include auditing charts, obtaining the patients' views of the care given, and obtaining information of the quality of nursing care given as perceived by the patient care manager or patient care manager assistant. Also, the instrument used was slightly outdated, (1960), and there was no information available regarding its reliability and validity.

Another factor that may have influenced the results was the convenience setting from which the subjects were selected for this study. Because the nurses had to satisfy certain criteria in order to be a subject, the study was limited to the units in which nurses met such criteria. Unfortunately, only two types of units employed nurses who fit this criteria, medical-surgical and adult critical care units. Therefore, other units in the hospital were not represented. Also, the total number of subjects was only thirty-one, and a larger number would have better represented the conventional and nonconventional shift

workers.

In examining what could have been done differently to improve this study, the researcher would have devised a multi-site study. This would have allowed the results to be more representative of the nursing population. Using a broader geographic region would have allowed the results to be representative of both urban as well as rural hospitals.

The results of this study hold many implications for the practice of nursing. This study has shown that the quality of emotional care given by nurses is significantly higher in nurses working nonconventional as compared to conventional shifts. In relation to emotional care, nurses need to take the time, regardless of the length of day, to develop therapeutic relationships with their patients. By doing so, the nurses can better assess to the emotional and psychological needs of the patient and can, therefore, care for the patient in a holistic manner.

As mentioned previously, this study has also shown that working nonconventional shifts neither helps nor hinders the quality of nursing care in all other areas

when compared to working a conventional shift. According to Nazarko (1994), many benefits do exist for individuals who work longer shifts, twelve-hour shifts in particular. For the employee, or RN, less time is spent traveling to and from work, and there is more leisure time available to them. From the patient's perspective, with twelve-hour shifts or any other longer, nonconventional shifts, he or she can be expected to be cared for by fewer nurses in a twenty-four hour period (Northcott & Facey, 1995), thereby making the patient feel more comfortable and secure while assuring more continuity of care. Since shift length has been shown to affect only one aspect of quality of care, nurses who are aware of this potential problem and take strides to overcome this deficit can work the shift of their preference without the fear of neglecting the needs of their patients.

Implications exist for nursing administration as well. Administration may want to focus studies on the potential for a lapse in the quality of emotional care given by nurses working conventional shifts. In-services and continuing education on building

therapeutic relationships may help to increase the quality of emotional care given by these nurses. Nursing administrator could also explore those factors which seemingly prevent the conventional shift staff nurse from delivering high-quality emotional care to their patients.

Nurse researchers can use this study to validate previous studies as well as investigate related issues dealing with shiftwork and quality of care. For example, one may elect to study quality of care by comparing specific groups of nurses working different shifts, i.e., medical-surgical nurses versus obstetric nurses. Quality of care could also be studied by comparing day-shift nurses to evening- and night-shift nurses. The number of years of working experience as an RN could also be used as a variable in comparing the quality of care provided by RNs. Also, nursing researchers could utilize different measures (such as chart auditing or observation by others) to evaluate the quality of nursing care.

As is apparent in researching related literature for this study, "quality of care" is a very vague term,

and no universal definition exists. It may be in the best interest of the profession for nurse researchers to formulate such a definition.

It is imperative that such studies not only be conducted, but the information gained from the studies be disseminated as well. This can be accomplished in a variety of ways. Presentations of the study and its findings can be made to faculty and students as well as to practicing nurses. This may enable the nurses to make better and more informed choices or decisions about working nonconventional shifts. It is also important to publish the research findings in a nursing journal so that the readers may become more aware of recent studies on shiftwork and quality of care.

In conclusion, nurses' perceptions of their own quality of nursing care was found to be significantly higher in nurses working nonconventional as compared to conventional shifts in regards to emotional care. No other aspect of quality of care was found to be significantly different between the two groups of nurses. In the future, more research in this area along with a clearer definition of quality of care will

aid in clarifying the discrepancies concerning shift length and quality of care.

Appendix A

Appendix B

Tanya Igou
Lycoming College
700 College Place, Box 898
Williamsport, PA 17701

Ms. Eva Berring
Vice-President of Nursing
Rural Avenue Campus
777 Rural Avenue
Williamsport, PA 17701

Dear Ms. Berring:

My name is Tanya Igou. I am a senior nursing student at Lycoming College and am currently working on an independent honor's research project this semester. I would like to survey nurses at the Rural Avenue and Divine campuses of the Susquehanna Health System as part of this study.

I am requesting permission to conduct a study focusing on the full-time, registered nursing staff working various shifts at these hospitals. Full-time, staff RNs from every unit in the hospitals will be considered in this study. The participants will be asked to complete a 47-item questionnaire and a demographic survey. These forms will be distributed and collected by the researchers, and should take the participants no more than 10-15 minutes to complete. A "Letter of Consent" will accompany the forms, and will explain the purpose of the research, description of procedures, confidentiality issues, and the right to refuse or withdraw.

Thank you for your time and consideration in this matter. Please notify us of your decision by phone. I may be reached at (717) 321-4773. However, Lycoming Colleges spring break falls on the week of Feb. 25 - Mar. 3 and I will not be available that week.

Sincerely,

Tanya R. Igou

LETTER OF CONSENT FOR MEASURING REGISTERED NURSES' PERCEPTIONS OF QUALITY OF CARE

You are being asked to participate in a research study. Health professionals often study nurses in an attempt to identify certain characteristics and perceptions of nurse in the nursing profession. In order to decide whether or not you should agree to be a part of this study, you should understand enough about its risks and benefits to make an informed judgement. This process in known as informed consent.

This consent gives detailed information about the research study. This information will be discussed with you. Once yo understand the study, you will be asked to complete the questionnaire and place it in the brown envelope marked "Quality of Care Study." This envelope can be found on your unit near the nurses' station.

PURPOSE OF THE RESEARCH STUDY

The purpose of this study is to analyze whether registered nurses perceive a difference in the quality of care they provide when working conventional eight-hour shifts as compared to nonconventional shifts, including 10-, 12-, 16-hour shifts and overtime.

DESCRIPTION OF THE RESEARCH PROCEDURES

All information will be obtained from nurses selected for

this study. Materials for this study will be distributed by the researcher during the week of February 24, 1994. As a subject, you will be asked to complete a demographic profile and a 47-item questionnaire entitled Quality of Nursing Care--Registered Nurse. This instrument elicits information that addresses a registered nurse;s perception of the quality of nursing care provided for patients in a hospital setting. The form will take approximately 10 to 15 minutes to complete, and should be returned to the brown envelope by March 2, 1996.

SIDE EFFECTS/RISKS/BENEFITS

There are no risks or financial costs involved with participation in this study. No direct benefits are associated with you participation in this investigation, but the results of the research may result in improved quality of care in the future. This study is strictly for academic purposes only.

CONFIDENTIALITY

All information collected as part of this study will be coded by number and kept in a separate locked file. At all times confidentiality of subjects will be maintained, and at no time will any subject's name be linked to the research information or released for any reason. Please **do not** place your name anywhere on either of the forms.

RIGHT TO REFUSE OR WITHDRAW

The choice to enter or not to enter this study is yours. If

you wish not to participate, you will not affected in any way. Your return of the completed questionnaire constitutes your consent to participate.

The researcher for study is Tanya Igou, a senior nursing student at Lycoming College. If you need more information about this study before you decide to join, or if yo have further questions, please contact the above researcher at (717) 321-4773.

* I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw without prejudice at any time. By completing the questionnaire, I am giving my implicit consent to participate in this study.

Thank you for your cooperation.

Appendix C

Check the statement that **BEST** describes your work hours in a typical work week:

_____ 8-hour days, five days a week, with 4 or less hrs. of overtime per week.

_____ 8-hour days, five days a week, with more than four hrs. of overtime per week.

_____ 10-hour days, four days a week, with 4 or less hrs. of overtime per week.

_____ 10-hour days, four days a week, with more than four hrs. of overtime per week.

_____ 12-hour days, three times a week, with 4 or less hrs. of overtime per week.

_____ 12-hour days, three times a week, with more than four hrs. overtime per week.

_____ 16-hour shifts in combination with any other shifts, with 4 or less hrs. of overtime per week.

_____ 16-hour shifts in combination with any other shifts, with more than four hrs. of overtime per week.

_____ other- please describe: _____

_____.

Thank you for your cooperation.

Sincerely,

Tanya Igou

Demographic Questionnaire

Sex (circle one): Male Female

Age:

Race (circle one): Caucasian African-american Hispanic

Native American Asian Other_____

Type of unit on which presently employed (circle one):

Medical-Surgical Psychiatric Pediatric OR Suite

Emergency room Adult critical care Other _____

Pediatric critical care Obstetric

Number of years employed on above unit:

Number of years employed as a staff nurse on other units:

Marital status (circle one): Single Married Separated Divorced

Widowed

Number of children (if applicable):

Ages of children (if applicable):

Average number of hours of sleep per night:

Have you experienced any major stress-inducing events within the last year (i.e. death of loved one, divorce, moving, etc.)?

Yes No

If yes, how many?

Appendix D

QUALITY OF NURSING CARE QUESTIONNAIRE--REGISTERED NURSE

Safford, Beverly J., Schlotfeldt, Rozella M., and Bolcer, Eileen

Please place an X in the space to the right below the word that best describes how you feel about each question at the left. If you have any additional remarks you would like to make, please use the space "Additional Comments" which is provided at the end of the questionnaire.

	ALWAYS	USUALLY	SOMETIMES	SELDOM	NEVER
A. Were you able to do the little things for your patients that add to their comfort?					
Was there time for treatments and medications to be given on time?					
Was there time for p.r.n. medications to be given promptly?					
Was there time to be accurate in the care you gave to your patients?					
Did you feel adequately prepared to perform the procedures included in your assignment?					
Were you able to give detailed nursing care?					
Were you able to give your patients necessary assistance in getting in and out of bed?					
Were you able to provide for safety and take adequate precautions to prevent patient injuries?					
Were you able to take enough time so as not to hurry your patients while caring for them?					
Were you able to monitor your patients enough to recognize untoward signs and symptoms?					
Was there time to get to know the individual patient's needs?					
Was there time to understand your patients' physical problems?					

	ALWAYS	USUALLY	SOMETIMES	SELDOM	NEVER
Was there time to learn what the physicians' plans were for your patients' care?					
D. Was there time to determine what your patients would need for home care?					
Was there time for health teaching?					
Were you able to spend enough time with your patients so that you felt confident they understood what was taught them?					
Were you able to spend enough time with your patients and their families so that you felt confident they were well-prepared for the patients' discharge and home care?					
E. Did you have the supplies and equipment necessary to give good care?					
Did you feel that the nursing personnel were working together as a team?					
Was there sufficient time available during change-of-shift report for a clear explanation of your assignments?					
Was there time to carry out organized care with your assignments?					
Was there time to give adequate instruction and supervision to your team members? (If applicable)					
Were LPNs and aides able to keep you informed of needs and changes in their patients? (If applicable)					
Were other nursing personnel available when you needed their help?					
Was there time for brainstorming or time to consult other nurses throughout the day?					
Was there time to resolve problems that arose in the care of your patients?					
Were you and your nursing colleagues on congenial terms with other hospital personnel?					

	ALWAYS	USUALLY	SOMETIMES	SELDOM	NEVER
F. Were you able to discuss your patients' problems with the physicians?					
Were you able to keep physicians informed as to their patients' progress?					

Please indicate which term best describes the nursing care you gave in the past week:

Excellent	Very Good	Satisfactory	Only Fair	Unsatisfactory
_____	_____	_____	_____	_____

Additional Comments:

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