Registered Practical Nursing Association of Ontario

NURSE STAFFING LITERATURE REVIEW©

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ABSTRACT

A literature review of articles, reports and publications that examine particular nursing characteristics in relation to patient outcomes was undertaken. The Registered Practical Nurses Association of Ontario provided sets of documents held by them and another professional nursing group. A general search of publicly available materials was also conducted. All of the documents were submitted to a standard qualitative analytic approach. Research studies were classified according to five major nursing practice theme areas: education, staffing, work environment, nurse categorization, and model of care. The studies in each area were summarized, highlighting major findings and discussing possible research, limitations and gaps. A description of more general challenges related to nursing research is provided.

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TABLE OF CONTENTS

INTRODUCTION

Overview

The Registered Practical Nurses Association of Ontario (RPNAO) is the professional body representing the Registered Practical Nurses (RPNs) who practice in Ontario. Over the past decade, a number of research articles and reports were published, examining the functions, roles and practices of nurses. The RPNAO is interested in learning how these studies are affecting or could affect the nursing profession as a whole and RPNs in particular.

A brief reading of the research materials available from other nursing professional associations and groups raised concerns within the RPNAO regarding the completeness and currency of the studies. Moreover, some doubt exists whether other research may exist in other venues or might be more recent in nature. In other words, there is an interest in achieving as broad a scan as possible of the existing nursing literature.

As a research based organization, the Workplace institute was engaged by the RPNAO. The intention was for the research staff of the Institute to conduct an external and unbiased review of the published, nursing research.

Purpose

The project's purpose is to conduct a detailed, impartial review of nursing research literature available from nursing organizations, academic institutions, professional journals and other sources, with particular emphasis on the links between nursing characteristics and patient outcomes.

Objectives

The objectives of the literature review were to:

- Identify the common findings and recommendations flowing from the various nursing studies.
- Provide an understanding of the content and implications of nursing-related research as a basis for discussion and collaboration with other nursing associations and professional groups.
- Gain a general understanding of the current research in order to advocate for research initiatives dealing with other relevant nursing issues.

The objectives of this report are to

- Describe the methods employed in conducting the literature search and review.
- Delineate the variables applied in the review.
- Discuss the major findings produced from the body of nursing literature.
- Highlight issues and gaps not considered in the various research studies.

APPROACH

Overview

Introduction

A focused examination of the existing research related to the characteristics of nurses in various work settings was the primary method employed in the project. The particular activities included:

- Reviewing existing information.
  - materials available from the RPNAO
  - publications available from other Canadian nursing organizations.
- Searching alternate literature sources.
  - articles and reports obtained through university and public libraries.
- Compiling and analyzing the literature.
- Producing a summary report.

Scope

In consultation between the RPNAO and the Workplace Institute, it was decided that the literature search would be limited in its scope, owing to the constrained time frame available and the possible massive amount of material available. The specific focus of the research materials examined during the review would consist of two elements:

- Independent variables reflecting;
  - specific nursing related attributes, such as entry level education, continuing education, certification, experience levels and specialty employment,
  - delivery of care models, and continuity of care, and
  - work setting context, including acute care, long-term care, hospital unit, staffing mix, support levels and type, etc.
- Dependent variables dealing with patient outcomes encompassing mortality, morbidity and satisfaction.

Reviewing Existing Information

The RPNAO indicated that a substantial amount of existing material could be provided from its own library, as well as documents it had been given from other nursing professional associations and groups. The various publications, articles, reports and so forth were forwarded to the Workplace Institute. During this initial activity, the goal was to identify any immediate gaps in the data that required additional searching or follow-up.

Searching Alternate Literature Sources

After the initial review, a systematic search of alternate information sources was undertaken. This stage involved a broader scan of the publicly available sources, including:

- The Ryerson University libraries.
- The Toronto Public library system.

Literature Analysis

Analyzing information for the review included the critical examination of literature, data and sources collected to answer original research questions. In addition to coordinating and summarizing individual items, the analysis involved assessing the value and appropriateness of the information gleaned from all materials as a whole. Analytic activities reflected the following:

- Reading and scanning the assembled material.
- Recording and categorizing individual items and overall themes.
- Synthesizing and summarizing any findings.

The RPNAO will be responsible for interpreting the literature search analysis based on its in-depth understanding of and familiarity with the nursing environment.

FINDINGS

Overview

Since the RPNAO is a Canadian body, the main interest during the review was finding and analyzing articles, reports and documents that reflected a Canadian context. The reality, however, is that most of the available publications originated in the United States with a few others being from other countries. Nonetheless, because the national health care systems differ somewhat from one jurisdiction to another with respect to nursing practices, greater interest was devoted to research produced in Canada.

Several major themes were revealed during the review, including:

- Education
- Staffing.
- Work environment.
- Nurse categorization.
- Model of care.

Many of the studies reviewed had overlaps of these theme areas. Still, the primary thrust of any given study dictated the category in which it was placed.

Education

Introduction

A substantial number of nursing studies concerned the connections between nurse education and various outcomes, including patient care. Often, the educational variation was between Registered Nurses (RNs) who held a baccalaureate degree and those with a nursing diploma or associate degree. In a few studies, the influence of a post-graduate nursing education was also discussed. However, comparisons with other categories of nurses, such as Licensed Practical Nurses (LPNs) and Registered Practical Nurses (RPNs), were focused not so much on education as different skill mixes.

Research

In a study utilizing secondary and survey data from 168 Pennsylvania hospitals, Aiken et al (2003) examined whether the proportion of degree educated RNs had an effect on surgical patient mortality rates. They found that a moderate increase in the number of degree educated RNs were associated with a decrease in patients' likelihood of dying and the odds of failure to rescue. Although the study was widely supported in some nursing circles because of its encouragement for higher education as an entry requirement to nursing (Johnson, 2004), it also has its critics. In the journal Nursing (Long, 2004), the president of the National Organization for Associate Degree Nursing pointed out that the hospitals included in the study had a number of confounding characteristics for which controls were not imposed, such as the use of higher levels of technology. However, in the same article, Aitken defends her design and maintains that controls for these various characteristics were employed.

Estabrooks et al (2005) studied discharge data for patients with acute myocardial infarction, congestive heart failure, chronic obstructive pulmonary disease, pneumonia and strokes from 49 acute care hospitals in Alberta. The primary data were supplemented with 6,526 completed surveys from nurses in the province. Nurse education was found as a contributing factor in patient mortality. Along with a richer nursing skill mix (i.e., a higher ratio of RNs to non-RN nursing staff), lower numbers of casual and

temporary employed nurses and higher levels of nurse/physician cooperation, a higher proportion of baccalaureate-prepared nurses was associated with lower levels of patient mortality.

On the other hand, in an earlier study, Blegen et al (2001) reanalyzed data collected previously from 42 inpatient units at a tertiary care hospital and 39 units at 11 American hospitals. The goal was to determine whether differences in experience and education would impact patient care, specifically medication errors and falls. The results indicated that higher experience levels affected patient care outcomes, whereas education level (i.e., the number of BSN educated RNs) did not show significant differences.

Ridley (2008) performed an extensive literature review of research that studied the issue of nurse education. She found that the number of care hours devoted by nurses and the nursing mix, that is higher proportions of RNs versus LPNs seemed to have a positive effect on patient safety. Nevertheless, she also states that RN education level (BSN, ADN or diploma) was not strongly linked to patient safety.

As mentioned above, some nursing professional groups, academics and commentators have remarked on the research that has been done in the area of nursing education. Long (2004) stressed the importance of promoting improved nursing education, particularly at the degree level, as did Johnson (2004). Lewis (2009), however, questioned the entire necessity for having baccalaureate and master's degrees in nursing, especially in terms of how the process of higher education for nurses was being reconfigured.

Summary

A comparatively small number of studies were collected during the research review process that explored the issue of nursing education. Nevertheless, it appears the question of appropriate nurse education remains rather unsettled. Moreover, a number of concerns have not been addressed in the current research, including:

- The initial education level for individuals represents an entry-level requirement, along with several other prerequisites, such as passing licensing examinations. To what extent, therefore, does this initial education contribute to nursing performance in the long-term?
- None of the studies contained in the literature investigated the connections amongst entry-level education, continuing education, nursing performance and patient outcomes. If continuing education is deemed necessary for professional development, in what ways does it add to performance, or competency and improvement? Are the continuing education opportunities different for the various categories of nurses: RNs with and without degrees, RPNs/LPNs and nurses' aides?
- The studies tend to reflect cross-sectional comparisons using regression analyses to ascertain the links and their strength. Yet, there is also probably value in conducting studies that incorporate a longitudinal approach in the method, which tracks cohorts of nurses with entry-level education over a number of years.

Staffing Issues

Introduction

A majority of the research studies included in the review were devoted to issues surrounding nurse staffing. The three primary components observed in the staffing literature were: the number of nurses available, the amount of time devoted by nurses to patient care, and the mix of different kinds of nursing staff. Typically, the conclusions from many of these research efforts calls for an increase in the number of nurses and a higher proportion of RNs in relation to other types of licensed nurses.

Research

Using administrative information for medical and surgical patient discharges from 799 hospitals across 11 American states, Needleman et al (2002a) examined the effects of nursing care on the patient outcomes of medical complications or death. Nursing care included the proportion of nursing hours provided by RNs, LPNs and nurses' aides, respectively, per patient day and the amount of overall care provided. The results indicated that a higher proportion of RNs and more RN patient hours were associated with shorter hospital stays and lower levels of infections. A similar finding was not found when an increased number of LPN or nurses' aides were considered.

In revisiting the data from the 2002 study, Needleman et al (2006) simulated three nurse-staffing options with the purpose of determining the various costing consequences and patient outcomes. These simulation options comprised: raising the proportion RN hours to the 75th percentile in relation to total nursing hours; raising the number of licensed nursing (i.e., RN and LPN) hours per day to the 75th percentile; and raising staff levels in hospitals that were below the 75th percentile. By applying a series of regression analyses, it was determined that costs would rise under each simulation but would be lowest when more RNs were hired to replace LPNs. The study specified that patient outcomes, such as length of hospital stay and adverse patient consequences would be improved by increasing the number of nursing hours regardless of whether they are delivered by RNs or LPNs. Nevertheless, while the results provided a degree of support for employing more RNs in hospital settings, the study was comparatively hypothetical in nature, in view of its grounding in simulations rather than comparative empiric analysis.

Tourangeau et al (2002) explored the effects of several nursing elements on mortality rates of hospital patients discharged within 30 days. In addition to administrative patient data collected from 75 acute-care hospitals in Ontario, they had 3,998 responses from a survey of Ontario nurses. The nursing variables included in the study were inpatient clinical nursing hours worked, the proportion of RN hours in relation to hours worked by all nursing staff (i.e., RNs, RPNs and unlicensed nursing assistants), availability of professional support (defined as nursing specialists or expert nursing consultants), years of experience, and nurse capacity (i.e., missed shifts). Three of the nursing variables were found to be predictive of lower mortality rates, those being a richer RN skill mix, more years of experience and more shifts missed. With the exception of skill mix, most of the variables concentrated on the contributions of RNs. Even the skill mix, however, compared clinical RNs with a homogenous combined group of other nursing staff without any differentiation. Only RN experience levels was analyzed.

In a subsequent piece of research, Tourangeau et al (2006) assessed patient mortality in relation to a set of hospital nurse staffing characteristics. All teaching and community hospitals in Ontario were targeted for inclusion in the study (n=75); small and specialty (e.g., paediatric and psychiatric) hospitals were excluded. Patients were chosen based on four diagnoses: acute myocardial infarction, stroke, pneumonia, or septicaemia. In total, 3,886 nurses supplied answers to a comprehensive survey. Through a series of regression analyses, the study revealed that lower mortality rates were associated with hospitals that had: a higher percentage of RN staff, a higher percentage of baccalaureate-prepared RNs, a lower amount of all categories of nursing staff per weighted patient case, higher nurse-reported adequacy of staffing and resources, higher use of care maps or protocols to guide patient care, higher nurse-reported care quality, lower nurse-reported adequacy of manager ability and support, and higher nurse burnout.

Although much of the nurse staffing research reflected acute care settings, Horn et al (2005) looked at the staffing issues and patient outcomes in long-term care facilities. Using data from a national survey, the research focused on over 1,300 patients in 82 American long-term care institutions. It was found that increased RN time spent with residents per day was linked to improvements in both negative (i.e., pressure ulcers, hospitalizations, weight loss, catheterizations, etc.) and positive outcomes (i.e., use of nutritional supplements). At the same time, more LPN and certified nursing assistant time with patients also showed decreases in the negative outcomes but no increases in the positive outcomes. While the researchers emphasized the need to add more RNs in long-term care facilities, they did not deal with the issue of additional cost or make an attempt to determine an optimal nursing mix of RNs, LPNs and nursing assistants.

One aspect of many staffing studies was the comparatively few types of hospital units that are represented and the high patient risks involved with some units – cardiac or surgical units are the ones most usually scrutinized. However, Sasichay-Akkadechanunt et al (2003) utilized data from patients in seven medical units and 10 surgical units in a major university hospital in Thailand. Their interest was in comparing mortality rates against four staffing variables, specifically the ratio of nurses to patients, proportions of RNs to the entire nursing staff, the years of RN experience, and the proportion of nurses with baccalaureate nursing degrees. The findings showed that only a higher ratio of total nursing staff to patients was linked to lower mortality rates, while the other staffing variables did not reveal significant connections. Of course, some confounding occurred because of a lack of variability in the measures – most nurses were RNs, all most all RNs had degrees, and the levels of experience were much the same amongst nurses.

In an atypical, qualitative study, Van den Heede et al (2007) organized a Delphi project with 24 subject matter experts and eight nurse administrators from 10 countries. These reviewers evaluated and prioritized 39 patient-outcome, 14 nurse-staffing and 31 background variables. The highest consensus score as a valid measure of nurse numbers was nursing hours per patient day. The proportion of RNs to total nursing staff achieved the highest consensus level as a skill mix variable. The patient outcomes identified as having the greatest sensitivity to nurse staffing were nurse perceived quality of care, patient satisfaction and pain, with the lowest sensitivity being renal failure, cardiac failure, and central nervous system complications. Although the findings from this study are interesting and provide some insights into nurse staffing, they tend to lack the credibility of standard empiric research.

In the Belgian context, Van den Heede et al (2009) wanted to compare the in-hospital mortality rates for cardiac surgery patients in a single acute care hospital with a set of nursing staff variables. These staffing variables included the number nursing hours per patient and the education level as determined by the proportion of RNs holding bachelor degrees. It was found that increased staffing levels in some units (i.e., post-operative general nursing) resulted in lower mortality rates but other units (i.e., intensive care) demonstrated no differences. Also, units having a higher proportion of RNs with degrees had lower mortality rates. Still, the study was somewhat incomplete because it appeared to focus on RNs only with no elaboration on the consequences of nursing mixes.

In a comparatively limited case study of a U.K tertiary cardio-respiratory NHS Trust in England, Shuldham et al (2009) investigated the connections between a set of nursing staff characteristics (i.e., nurse hours per patient day, permanent and temporary nurse hours as a percentage of total hours), and negative patient outcome (i.e., bed sores, falls, GI bleed, pneumonia, sepsis, shock and DVT). Overall, no significant differences were revealed between the nursing staff characteristics and patient outcomes. Given the rather narrow scope of the study with only two staffing variables, however, the findings are hardly surprising.

Also in Europe, Tervo-Heikkinen et al (2008) studied the connections between nurse staffing and patient satisfaction. Surveys were sent to nurses and discharged patients from 34 medical and surgical wards at four Finnish university hospitals. Nursing staff variables included: nurse category of RN or LPN, skill mix (i.e., the proportion of RNs in relation to all nurses), and patient load. It was reported that patients were generally satisfied with the hospital care they had received. Yet, the proportion of RNs, the RN hours per patient, and the RN years of experience were highly linked to patient satisfaction. Most of the results reported on RN outcomes with only limited comparison to LPN staff. The researchers also mentioned that the skill mix in university hospitals usually had a higher RN representation than other hospitals.

Recently, Kalisch et al (2011) pursued the question of whether the level and type of nurse staffing and other unit characteristics predict missed nursing care. Utilizing 110 medical–surgical, rehabilitation, intermediate and intensive care units in 10 acute care hospitals in one Midwestern state, nurses were asked to complete a survey. In addition to routine nursing information such as staffing levels (i.e., hours per patient day, RN hours per patient day, and skill mix), and staffing type (i.e., education and experience), survey respondents identified how frequently specific elements of nursing care (such as ambulation, turning, patient assessment, teaching, etc.) were missed. RNs, LPNs and nursing assistants

were included in the study. Hours per patient day was found to be the most significant predictor of missed nursing care. In other words, when there was fewer nursing staff, the chances of missed nursing care increased. The researchers suggested that missed nursing care, as a moderating factor, might go some way in explaining the links between staffing levels and patient outcomes.

Instead of viewing the effects of entire units or hospitals, Patrician et al (2011) examined nurse staffing issues at the individual shift level. Administrative data from over 100,000 shifts across medical, surgical, critical care and "step down" units at 13 American military hospitals were gathered. The adverse patient outcomes included falls and medication errors. Nurse staffing variables consisted of total nursing care hours per patient per shift, skill mix consisting of the proportion of hours worked RNs, LPNs and unlicensed care providers per shift, and shift interval comprising a normal eight-hour work period. The findings showed that adverse patient outcomes occur more frequently on shifts when there was less nursing care time, less nursing staff in general and fewer RNs in particular. However, the type of unit had a moderating effect because some units had higher proportions of nurse to patient ratios. For example, critical care had normally fewer adverse patient outcomes. Nevertheless, the scale of the study was somewhat limited and did not consider a number of other nursing characteristics, such as experience and continuing education.

In addition to original research, a few literature reviews have been conducted to assess the connections between nurse staffing, and organizational and patient outcomes. Thungjaroenkul et al (2007) found a lack of consistency amongst the various staffing studies with a range of different methods and definitions, and uncertainty regarding the results that showed staffing influences hospital costs and patient length of stay. Even so, these researchers emphasized that having an adequate number of RNs is likely to avoid adverse patient effects and reduce overall patient costs. In a similar vein, Flynn and McKeown (2009) examined over 500 international research papers that spanned a 10-year period. They discovered that major similarities existed amongst the papers in regards to the staffing issues with much of the research aimed at the impact on patients under poor nurse staffing. However, their review did not reveal satisfactory evidence of a causal relationship between these variables, owing to the variance in definitions and measurements.

Summary

The literature assessed in this review appears to suggest, in relatively consistent terms, that the proportion of RNs to the entire nursing workforce is a major staffing mix consideration in relation to patient outcomes. However, the reason for this result does not seem to have been investigated to any extent. What makes RNs different from other nursing staff? In the previous section, it was pointed out that entry-level education is not an adequate explanation. The different curricula of training undertaken by the various categories of nurses have not been researched sufficiently to provide an answer. Similarly, no research was uncovered that dealt with continuing education or academic upgrading for RNs or any other type of nurse, thereby limiting the scope of any answers regarding the contribution of RNs. The kinds of units included in many of the studies involved high-risk patients requiring high levels of care, which could be a confounding factor. The nature of the tasks performed by different categories of nurses has also not examined. Thus, a solid finding is present in the literature but an adequate explanation is not.

In some of the research, evidence was produced to show that increasing the number of nurses, regardless of type had a positive influence on patient outcomes. Likewise, increasing the amount of nursing time spent with patients had a salutary effect, although more often than not this factor was discussed solely in terms of RN time.

Work Environment

Introduction

A substantial amount of the nursing research has focused on the work and demographic characteristics of nurses. However, people do not normally work in a vacuum; they are impacted by the environments around them. This is also true of nurses. These work environment considerations will also impinge upon

the productivity and performance of nurses, and, ultimately, patient outcomes. Until recently, relatively little research linked the environment with nursing practices and patient outcomes.

Research

Aiken et al (2008) also assessed the influence on nursing practice environments from the perspectives of nursing outcomes and patient mortality. They employed administrative and survey data collected from nurses and patients at 168 hospitals in Pennsylvania. Nursing outcomes included job satisfaction, burnout, leaving intentions, and estimates of quality of care. Mortality and failure to rescue comprised the patient outcomes. In their findings, the researchers indicated that mortality rates were substantially better in hospitals that had better care environments (as identified in survey results), the best staffing levels (i.e., mean number of patients assigned nurses) and the most highly educated nursing staff (i.e., the percentage of nurses with bachelor degrees or higher). Nurses reported more positive job experiences and fewer concerns with care quality, and patients had significantly lower risks of death and failure to rescue in hospitals with better care environments. In the discussion, the article extrapolates to a substantial degree the number of patients' lives being saved by increasing the level of environmental caring, improving staffing levels, and enhancing nurse education. However, this observation might be confounded by the application to a single state and the type of units investigated – a more comprehensive study would be necessary to confirm this finding. In addition, some key nursing characteristics, such as experience was missing. Moreover, only RNs were represented in the analysis.

Research produced by Purdy et al (2010) examined the connections between empowered work environments and patient outcomes. Data were collected from administrative databases and two sets of standardized surveys – two for nurses and two for patients – for 61 medical and surgical units across Canada. It was found that hospital units deemed to be empowering workplaces were reported as being more positive by nurses who self-assessed the quality of care delivery and predicted fewer patient falls and nurse identified risks. The study, however, focused solely on RNs and did not segment the results by other nursing demographic or professional characteristics.

An aspect of health care establishments that appears to have received scant interest, as least in terms of nursing practices, is organizational culture. Mallidou et al (2011) explored the linkages amongst nursing subcultures and patient outcomes. The study drew secondary data from the International Hospital Outcome Study for 1,937 RNs from 12 hospitals in Alberta. The nursing specialties included were: medical, surgical, intensive and emergency. The specialties were compared on a number of nursing characteristics, such as experience, full-time/part-time employment, salary satisfaction, continuing education, quality assurance program, autonomy, control over practice, nurse–physician relationships, and emotional exhaustion. The results of the study demonstrated that specialty subcultures influenced various patient outcomes. The quality of care was significantly influenced by control over practice, and proved better in intensive care units than in medical units.

Summary

Intuitively, working in a positive environment would be expected to have a positive influence on people's performance and productivity. The studies reviewed in this section seem to confirm this supposition. However, thus far, the subjects of environment and culture have generated little research interest. The situation is regrettable because, at this juncture, it is unknown whether these factors have an impact on other nursing considerations and characteristics. For example, could the results evident from some of the nurse staffing research be confounded by cultural dimensions? For the time being, we simply do not know.

Nurse Categorization

Introduction

Nursing is not a homogenous profession. There are RNs, LPNs and nursing assistants. Even within the RN group, education and training differentiates its members by diploma holding members, those with nursing baccalaureates, and others who have advanced degrees. Moreover, a number of specialties are

to be found across the different categories, ranging from ward nurses, to operating room nurses, to psychiatric nurses, to nurse practitioners. Although an element in some of the research mentioned earlier, the focus in this section is on specific research that examines differences amongst the basic nursing categories.

Research

Through a correlational study, McGillis et al (2004) focused on comparing different nurse staffing mix models and their effects on patient outcomes. The models included: an RN and RPN mix; an all-RN standard; a proportion of regulated (RNs) and unregulated staff; and an RN, RPN and unregulated staff model. Data were collected from 19 teaching hospitals across Ontario. Both medical and surgical patients were involved. Negative patient outcomes included medication errors and infections. The results showed that, the lower the proportion of professional nurses (RNs and RPNs), the higher the number of medication errors and patient infections. Additionally, the lower the nurses' experience the higher the number of infections. Unfortunately, the models proposed in the study did not seem to be sufficiently tested or yield enough differentiation with respect to differences between nursing categories.

Summary

Nurse categorization is another research area that has not earned a lot of attention. It seems that a number of studies appear to position the various nurse categories in opposition to one another. In a limited fashion, the study described in this section attempts to identify a research need to probe further into the contributions that all nurse categories make to the patient care system.

Model of Care

Introduction

The research available that examines the relationship of different models of care with patient outcomes tends to be relatively sparse. Even though several models are to be found in various nursing environments, the testing of them through research has been limited. Nevertheless, at least one instance of model testing was discovered through the literature review.

Research

Meyer et al (2009) conceptualized a patient care delivery model. This model proposes that a number of factors predicts patient outcomes, including patient traits, nurse characteristics and unit factors, and are modified by care delivery subsystems and staffing utilization. The cardiac units at six hospitals (of which four were teaching institutions) in Ontario and New Brunswick formed the foundation of the study. Patient data were accumulated through administrative databases, patient surveys, and patient interviews. Data for the requisite nurse variables of education, age, experience, employment status, satisfaction, and so forth were determined from a survey. Individual unit information was collected via unit profiles and staffing forms. As predicted by the model, the results suggested that the relationships amongst nurses, patients, and units are complicated. Nevertheless, the study supported the idea that nurses' performance is enhanced when staffing practices are appropriate. Moreover, when staffing utilization levels of between 80% and 88% were applied, the outcomes for cardiac patients were better. A requirement exists, however, to conduct the research delivered in this study on a larger scale with more hospitals and different kinds of hospital units.

Summary

In every nursing situation, a model of care exists as a framework for directing care and resources. During the literature search process, however, studies that assessed these models against actual patient outcomes were scarce. Additional research work on this topic is necessary.

WRAP UP

Synopsis

The RPNAO was interested in learning what research is available that ties various nursing characteristics to patient outcomes. The Workplace Institute undertook a literature review of research publications supplied by the RPNAO. Other public information sources were also searched. A standard approach was applied to analyze the diverse articles, reports and publications. A number of themes arose from the analysis, including entry-level education, staffing issues, work environments, different nursing categorizations, and models of care. Some of the theme areas, such as education and staffing, have been extensively researched, while others, such as care delivery models and nurse categorization, have not. Relatively strong empiric evidence exists to support certain nursing practices and activities, specifically the refurbishment in the mix of nursing staffs with different nurse categories. However, even in these well-researched areas, contradictions and inconsistencies abound. For example, the connection between possessing a baccalaureate degree and patient outcomes is established in a host of studies. Nevertheless, since this is an entry-level requirement less understanding is present regarding how this translates into actual nursing behaviours and performance. In most areas, additional studies are necessary to clarify or amplify current knowledge. Moreover, a variety of gaps and limitations are still to be found in the research.

Limitations and Gaps

An extensive body of nursing research is accessible. Studies cover a wide variety of subjects and issues. However, as with most realms of research, gaps and limitations appear in individual research efforts. As reported above, each theme area contains its own challenges. All the same, some broader comments might be offered regarding the research covered in this literature review

Nursing is a very heterogeneous profession. As such, containing and controlling for the multitude of variables and factors that might be present in any given study presents difficulties. The risk is either being to broad or too narrow with the scope invariably bringing problems in matching different studies because of inconsistent definitions or methods.

When examining patient outcomes, a tendency was noticeable to focus on the negative. In other words, comparatively small negative outcomes overwhelmed the generally positive outcomes. It is recognized that, in medical settings, the principal interest is in reducing or eliminating adverse conditions. Still, care should be exercised that statistical results do not test credulity. Some balance between positive and negative outcomes might be required.

A number of research issues seem to need addressing in the near future, including:

- The influence of continuing education and training on nursing performance.
- The interrelationships between different nursing categories and the roles played by each in care delivery.
- The interconnections between education, training and experience, and care delivery.
- Evaluation of different care delivery models.

APPENDIX ONE – REFERENCES

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