2014 NURSE STAFFING LITERATURE REVIEW©

September 2014

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ABSTRACT

This is the fourth iteration of the RPNAO's Nurse Staffing Literature Review. The aim of these reviews is to provide the RPNAO with a summary of the latest academic and professional research literature available related to the healthcare role of RPNs. To this end, the topics of education, staffing, work environment, nurse categorization and models of nursing care have been the primary focus of the various reviews. The latest reports also examined the role of ENs in different countries of the British Commonwealth because of the close alignment of ENs with RPNs. Although entry-level education has tended to concentrate on RNs, the value of current curricula for all categories of nurses is being debated in the literature. In the past, staffing issues usually only concerned RNs, but some of the studies collected this year were expanded to include LPNs/RPNs. Job satisfaction, working conditions and organizational culture remained central issues when discussing the work environment settings in which nurses work. For a number of countries, the national regulatory systems used to categorize nurses, especially LPNs and RNs, received attention in several articles. While models of nursing care typically centre on professional practices, one article found during the search discussed the improvements that can occur through changes to physical layouts when delivering nursing services. SEN specific research in the U.K. was not found but several articles highlighted the increasingly important place of ENs in the Australian healthcare system. The RPNAO Synergy Report underlined the contributions of RPNs to the nursing profession even though some ambiguity arose regarding scope of practice. The report's results matched some of the literature review themes. The limitations inherent in the studies of the literature review were discussed.

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INTRODUCTION

Overview

The Registered Practical Nurses Association of Ontario (RPNAO) is the professional body for Registered Practical Nurses (RPNs) in Ontario. In 2011, the association made a commitment to the Ontario government that it would complete a literature review of RPN-related research on an annual basis. Since the review's inception, the RPNAO has engaged Dr. R. Owen Parker of Parker Research Associates to complete the promised literature review.

In its first iteration, the review covered a broad spectrum of the nursing academic literature over the previous two decades. During the process, it was discovered that most of the research fell into a distinct set of thematic categories. Since then, the review has focused on tracking any changes or highlighting new insights within these theme areas. The present report, therefore, summarizes the academic literature produced over the past twelve months that examines RPN practices and procedures. While the RPN designation is unique to Ontario, the Licensed Practical Nurse (LPN) is the qualification equivalent in other jurisdictions, even if the education and legislation for nursing practices may differ somewhat from province to province .

A key element in the review requires linking the RPN or nursing practice categories with patient care outcomes. Hence, the articles, reports and publications selected for the review where supposed to be chosen demonstrate a connection between nursing practices and patient care.

In 2012, a need to examine the roles, responsibilities and functions of State Enrolled Nurses (SENs) in the United Kingdom (UK) and Enrolled Nurses (ENs) in other British Commonwealth nations was indicated. Hence, research aimed at SENs and ENs has been included in the reports for subsequent years.

Objectives

The objectives of the 2014 RPNAO literature review study are to:

- Undertake a literature review of any articles, reports, documents or studies published since the 2013 literature review, concentrating on the issues and topics raised in previous reviews.

- Locate research literature connected with the "enrolled" nursing role in the UK and other British Commonwealth countries.

Purposes

The purposes of this report are to:

- Describe the methods employed in conducting the literature search and review preparation.

- Discuss the major findings produced from any nursing literature since the 2013 review.

- Summarize research or commentary pertaining to the employment of SENs and ENs in British Commonwealth countries since the 2013 review.

APPROACH

Overview

The current literature review comprised dual objectives and framed in the following manner:

- Phase One – RPN Replication. The first phase of the review is replicating the search for RPN/LPN related material in published academic and professional literature produced since the 2013 review report, based on previous project criteria.

- Phase Two – EN Replication. Using the same framework of Phase One, the second phase is concerned with the academic and professional literature, concentrating on the activities and roles of ENs in certain British Commonwealth countries.

The search criterion was to scrutinize materials that primarily applied scientific principles through empiric methods. Hence, articles and studies demonstrating quantitative procedures, probability sampling, and statistical techniques were examined closely. Nevertheless, because of low numbers, reports or publications employing a qualitative research approach were also considered, if the research subject or question was of sufficient importance.

Phase One – RPN Replication

Scope

The present literature review employs the same approach that was introduced in previous reports. The processes for searching and analyzing articles and documents remain largely unchanged. Research and academic materials reflected the key elements found in the nursing profession, as follows.

- Independent variables comprised:
  - specific nursing related attributes, such as entry level education, continuous training, certification, experience levels and employment conditions,
  - 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, and so forth.
- Dependent variables related to patient outcomes comprising patient mortality and morbidity, and nurse job satisfaction.

Literature Sources

As completed in earlier reviews, articles, documents and reports from both the RPNAO and non-association sources, such as academic databases, public libraries and professional journals, were searched. Nevertheless, based on a subjective estimate, there appeared to be more publications generated this year than in the past, using the same search terms. One possible explanation for this larger number may be the wider application of electronic publishing and storage methods by various nursing journals. Still, even though the quantity of the research documents may have increased, the information quality continues to be relatively modest, in that the articles dealing with the specific themes of interest in the review remain limited.

Literature Analysis

The analysis of the various published materials involved:

- Searching and amassing the relevant material.
- Browsing and reading the assembled documents and articles.
- Recording and categorizing individual items.
- Synthesizing and summarizing the findings.

Phase Two – EN Replication

Scope

Methodologically, the EN replication has come to mirror its RPN predecessor, albeit on a smaller scale; the same searching techniques have been applied in identifying research specifically aimed at ENs, over the past twelve months. However, the original intention of uncovering material having similar dependent

(i.e., patient outcomes) and independent (i.e., role, education, staffing, etc.) parameters used in the RPN replication had to be moderated. Too few articles surfaced that met the dependent/independent criteria. Instead, the scope of this phase was expanded to incorporate research where interests of both Registered Nurses (RNs) and ENs converged.

Literature Sources

The information sources searched in Phase One of the review were also exploited in this phase. In previous reviews, ENs were found to work in specific countries of the British Commonwealth, including the United Kingdom, Australia, and New Zealand. In the current review, articles turned up that discussed EN conditions in South Africa. An examination covering other major Commonwealth countries, such as India, Pakistan, Nigeria, Malaysia, and Bangladesh was undertaken but without success.

Literature Analysis

Generally, the EN literature analysis duplicated that of the RPN replication, as follows:

- Searching and amassing the relevant material.
- Browsing and reading the assembled documents and articles.
- Recording and categorizing individual items.
- Synthesizing and summarizing the findings.

FINDINGS

Phase One – RPN Replication

Overview

In previous reviews, the research information was categorized according to five themes, as follows:

- Education.
- Staffing.
- Work environment.
- Nurse categorization.
- Models of nursing care.

For comparison and tracking purposes, these same themes were employed to catalogue the various articles, reports, and publications. In some instances, a particular piece of research overlapped categories and a decision would be taken to allocate it in the most appropriate theme area.

Education

Introduction. Previous reviews examined entry-level academic standards and continuing education of RPNs (or LPNs). Often these educational parameters were contrasted with RNs. The emphasis was on detecting any links between education, and patient care outcomes.

For the most part, the publications and articles dealt with the education and training standards or issues of RNs, especially regarding the effectiveness of nursing degree programs versus non-degree programs. As in previous years, no specific research was found devoted to RPN (or LPN) educational activities. Instead, several studies with application to the broader nursing community were highlighted.

Research. Teaching Evidence-Based Practices (EBPs) is an important function of the nursing educational experience. Finotto et al (2013) wanted to explore the perceptions of recent nursing

graduates regarding the usefulness of the benefits and skills they learned through a series of EBP labs taken during their nurse's education. They undertook a descriptive study using a sample of 300 newly graduated degree- nurses from the University of Modena and Reggio Emilia, in Italy. The data collection device was an anonymous survey that used questions having a ten-point Likert scale. In general, the new RNs responded that the evidence-based teaching was effective in understanding the research literature, assisting them in learning about patient problems, and obtaining the skills useful in their career development. The researchers concluded that including EBPs in the curriculum would promote nursing students' professional development and enhance in their competencies in comprehending research literature throughout their career.

In a similar vein as Finotto et al (2013), Johanson (2014) explored the views of recently graduated BSN nurses about the relevance of their education in terms of the demands they were facing. RNs who had graduated within the previous two years in South Carolina were selected to participate in the study. From this group, a random sample of 296 RNs were mailed a 12-item survey questionnaire; only 58 were returned, however. While the new graduates confirmed that their training was adequate for transitioning to the professional nurses' setting, they stressed that more opportunities to practice their clinical skills would have been helpful. In addition, the results showed that some of the health assessment content of their program, such as using an ophthalmoscope and otoscope, was not worthwhile for their entry-level practice. Still, other graduates who worked in speciality areas, including critical care, mentioned that they lacked some necessary practical skills such as cardiac monitoring and mechanical ventilation. Hence, while the education received by nurses was deemed adequate for most situations, it was suggested that new nurses might not feel completely competent with certain clinical-practice skills. Some additional practice time should be added to nursing curricula.

O'mara et al (2014) considered how student nurses experienced challenging clinical learning environments (CCLEs). "Students defined a CCLE as affected by relationships in the clinical area and by the context of their learning experiences." (p. 208) More specifically, students reported that two sources presented challenges: the context in which their learning occurred, and their relationships with others in the clinical learning environment. The researchers held focus groups with 54 nursing students at two Canadian healthcare sites. The students self-identified as having experienced a CCLE. The feedback from these individuals criticized the toxic relationships, the lack of learning opportunities, and the negative impacts they felt. To deal with the challenges being faced, the students employed a set of coping strategies categorized as rebuilding, redirecting, reframing, or retreating. The study emphasized that, although clinical learning is important in nurse education, faculty have the responsibility of creating positive environments in which students can learn to handle any challenges and develop suitable responses.

The weak relationship that often occurs between university nursing programs and clinical placement at healthcare facilities was explored by Hall-Lord et al (2013). An evaluation of a clinical supervision model was conducted, through a series of four questionnaires given to the nursing teaching staff at a Swedish hospital and a regional health service organization. The questionnaire comprised background information, quality criteria related to learning and supervision, factors contributing to assessment and fulfilment of students' goals, and collaboration and support. The respondents were 30 head nurses, 12 main preceptors, 193 personal preceptors, and 11 clinical nurse lecturers. The quality criterial were viewed by respondents as being met with the supervision model contributing to students achieving their individual goals. Nonetheless, not all of the conditions established in the model were fulfilled, particularly in the areas of collaboration and support. For example, nurse instructors and clinicians thought that the model was useful as a learning tool, whereas preceptors were less sure. Moreover, it was discovered that, while preceptors usually had many years of experience, a number lacked the necessary academic or specialist qualifications. However, despite some of supervisory model's shortcomings, the respondents considered it to be a valuable tool in nursing clinical education.

Moridi et al (2014) explored the negative impact of stress on learning in a nursing educational environment. Specifically, the researchers asked student nurses about the stress inducing factors they experienced during their clinical education. In a descriptive, cross-sectional piece of research, a convenience sample of 230 students who had completed at least one clinical training credit in the BSN

program at the Kurdistan University were administered a 60-item, five-point scale, questionnaire that dealt with five stressful factors. These factors included: interpersonal relationships; humiliating experiences; training setting; clinical experiences; and unpleasant feelings. While most students reported feeling stress and anxiety during their clinical training, the factor that provoked the highest level of stress was humiliating experiences, such as having a preceptor or mentor "giving a reminder in the presence of ward staff or physician." (p. 162) The factor related to the least stress was interpersonal feelings, such as "practicing segregation from the side of the therapeutic team between you and all fields." (p. 162) It is recommended that educators should be aware of the stress inducing factors and work to reduce them to enhance the nurse learning.

Summary. As in previous reports, the focus of most studies dealing with nursing education was on the degree requirements of registered nurses; no research arose for the educational needs of RPNs or LPNs. Nevertheless, the current articles examined issues that contained common concerns for all nurses, including the evidence-based foundation of instruction, the relevance of learning to practice, the need for clinical training, and the stresses induced by the teaching environment.

Staffing Issues

Introduction. In the past, three aspects of staffing were examined in the review as follows:

- The number of nurses available.

- The amount of time devoted by nurses to patient care.

- The mix of different kinds of nursing staff.

The issues related to staffing and the employment of nurses continue as important topics to the nursing profession, especially with the present-day variability of hospital and healthcare funding. Indeed, a broad spectrum of studies were devoted to the challenges of nurse staffing over the course of the past twelve months, resulting in a variety of research approaches being employed, resulting in diverse outcomes.

Research. From a study based in Europe, Aiken et al (2014) determined whether patient to nurse ratios and nurses' educational qualifications influenced differences in mortality rates from regular surgical procedures. Applying discharge data from almost 423,000 patients at over 300 hospitals across nine countries, the study estimated a 30-day in-hospital mortality level from surgery, after controlling for specific background factors (I.e., age, gender, admission type, etc.). Simultaneously, surveys of 26,500 nurses working at the target hospitals were undertaken to acquire information about staffing practices and education backgrounds. Some of the main findings showed that: an increase in workload by one patient per nurse increased the likelihood of an in-hospital patient dying within 30 days of admission by 7%; for every 10% increase the number of bachelor degree educated nurse was linked to a decrease of patient death by 7%; and at hospitals where 60% of nurses had bachelor degrees and nurses cared for an average of six patients there was a 30% lower mortality rate. The primary conclusion reached in the study was that nurse staffing cuts for fiscal reasons could have a significant adverse effect on patient health and deaths. The researchers also stated that the research contradicted a recent decision of the European Parliament to have two nursing educational tracks: one vocational and the other baccalaureate. However, they also noted that significant differences in education and staffing were found amongst the nine countries included in the study.

In an examination of nursing mix at federally regulated nursing homes, Zhang et al (2013) compared the different categories of nurses and the needs of patients. In all, data were collected from state surveys from 1997 to 2009 for all U.S. nursing facilities federally certified for Medicare, Medicaid, or both. The responsibilities and activities of RNs, LPNs, and Nursing Aids (NAs) were analyzed. A number of gaps in care were identified including a downward trend in the RN staffing of nursing homes, and an upward trend in the use of LPNs and NAs. Several reasons were identified for these changes. Cuts in Medicare and Medicaid payments occurring after the 2008 financial crisis have resulted in reduced nursing budgets. The needs of nursing home residents have shifted with some services increasing while others have decreased, thereby bringing about different costs. Finally, the processes and systems of patient care in nursing homes have become more efficient, with fewer nurses being required. The study concluded that,

as home care nursing increases, a gap may need to be bridged between staffing and resident care needs. Until greater efficiencies are found, quality will have to be safeguarded by increasing the nurse staffing in nursing homes.

Beeber et al (2014) compared the typologies of licenced nursing staff and services offered in residential care and assisted living (RC/AL) nursing homes. Licenced nursing was defined as being both RNs and LPNs. Semi-structured, telephone interviews were held with a convenience sample of administrators and healthcare supervisors from 89 facilities across 22 states in the U.S. The participants were queried regarding the nurses' backgrounds, such as the number of full- and part-time RNs and LPNs, the number of hours worked, and the number of hours for contract RNs and LPNs, as well as the nurses' education, training, nursing home experience, and work availability. A list of 47 services, including measuring vital signs, assessments, specimen collection, medication administration, skin and wound care, therapies, and laboratory, and so forth was developed. A cluster analysis was undertaken to determine how services were delivered by nurses with different characteristics. Nurses fell into four clusters defined according to total number of hours and the type of nurse providing the hours (RN, LPN, or a mix of both), and ranged from no or minimal RN and LPN hours to high nursing hours with a mix of RNs and LPNs. The 47 services grouped into five clusters: basic services; technically complex services; assessments, wound care, and therapies; testing and specialty services; and astrostomy and intravenous medications. The amount and skill mix of licensed nurse staffing varied amongst RC/AL nursing homes that, in turn, related to the types of services provided. Hence, the study emphasized that resident care and medical outcomes are associated with the services that can be performed by the licenced nursing staff at a particular facility. The authors admitted that the non-probability nature of the sample and research design precludes its generalizability to a wider population.

Another piece of research concentrating on healthcare delivery in nursing homes investigated the relationship between nurse staffing and resident quality of life (QOL) in Western New York State through a cross-sectional, correlational study (Shin et al, 2014). The independent variables were hours per resident day (HPRD), nursing skill mix, and turnover rate of nursing staff. The nursing data were retrieved from electronic administrative records and a work satisfaction instrument. Nurses were categorized as RNs or a composite of LPNs, Licenced Vocational Nurses (LVN), and Certified Nursing Assistants (CNAs). A total of 142 long-term residents from eight nursing homes in the Buffalo region of New York were interviewed. The resident outcomes (i.e., dependent variables) were measured using the self-reported QOL instrument. The samples were obtained through a convenience approach. The overall number of nursing records obtained was not reported. No QOL coefficients were statistically significant in relation to the RN HPRD. However, the CNA HPRD had a statistically significant positive impact on the spiritual well-being domain/cluster of the QOL instrument. A negative relationship existed between the amount of LPN HPRD and food enjoyment; and the ratio of more RNs to fewer LPNs and CNAs had a statistically significant negative influence on the meaningful activity, food-enjoyment, and security QOL domains. RN turnover had a statistically negative relationship with the sum of each domain. None of the QOL correlation coefficients was statistically significant with LPN turnover. The researchers acknowledge that the role of nurses in the quality of life of nursing home residents is a complex issue. The nurse staffing mix in this relationship is particularly complicated and requires further investigation. The relatively low sample size, as well as the sampling technique makes generalization to the larger nursing home population problematic.

In the 2012 literature review report, the introduction of California's Nurse Staffing Law (NSL) was highlighted. With last year's report, a study by Tellez and Seago (2013) concerned the improvement in levels of job satisfaction amongst nurses after the staff law was enacted. This year, Spetz et al (2013) looked at the subject of minimum staffing laws again, specifically by testing whether the law has brought about changes in patient safety. Data were collected from 278 acute care hospitals using the California Office of Statewide Health Planning and Development between 1999 and 2006. Approximately, 26,000,000 observations were collected but the final analysis contained 1,645 hospital-fiscal years. Six Patient Safety Indicators (PSIs) were identified, comprising (a) failure to rescue, (b) decubitus ulcers, (c) selected infections due to medical care, (d) postoperative respiratory failure, (e) postoperative deep-vein thrombosis or pulmonary embolism (DVT/PE), and (f) sepsis. Nurse staffing was measured as a ratio of the number of productive hours (non-vacation, non–sick leave hours) per patient day (HPPD) in medical–

surgical units. In the regression analysis, the HPPD variables were adjusted for each of the RNs, licenced vocational nurses (LVNs), and unlicenced aides and orderlies (Aides). It was found that the levels of licenced nurse staffing increased after the NSL became law. However, the higher number of nursing hours showed improvement for only one PSI (i.e., postoperative complications) and the length of stay for another PSI (i.e., selected infections). The researchers concluded that higher RN staffing per patient day had a limited effect on adverse events in the hospitals, although they recognized that the measures employed in the study had a number of accuracy limitations associated with them.

Schuelke et al (2014) posed the question, "What is the relationship between nurse characteristics and nurse intensity to the occurrence of adverse patient events and patient satisfaction?" (p. 27) They undertook a cross-sectional, correlational study where nursing characteristics were defined as: level of professional development; certification (according to the Magnet system); type of nursing degree; and nursing intensity (i.e., total nurse hours divided by number of patients). Patient outcomes included: incidence of falls; medication errors; pressure ulcers; ventilator-associated pneumonia; central-line associated blood stream infections; catheter-associated urinary tract infections; and scores on a standard patient satisfaction survey (i.e., the Hospital Consumer Assessment of Health Providers and Systems (HCAHPS)). The setting was a mid-western American tertiary care hospital, and the sample consisted of 213 RNs. Patient data were collected from the hospital electronic records. With some exceptions, nursing characteristics were found to have little statistical significance with patient outcomes. However, there was an association between the lowest nursing intensity score and the highest number of patient falls. Similarly, nurse/patient communication and patient advocacy on the HCAHPS were statistically related to the level of nursing education. The researchers suggested that the added costs associated with increased nursing will help prevent some adverse patient outcomes, and recommended that hospital leaders consider the financial impact that nurse staffing patterns and nursing characteristics have on patient outcomes. However, some of these financial conclusions are debatable, given that the results yield so few statistically significant relationships.

Summary. While the emphasis of most nurse staffing papers is still RNs, this year's review at least revealed that some researchers have begun to consider the relative contributions of other licenced nurses, particularly LPNs and RPNs. Research devoted to the staffing requirements of nursing homes and long-term care facilities seem more likely to pursue this factor by segmenting the results according to different nurse types. Nevertheless, a need exists for more studies to provide breakdowns by RNs, RPNs/LPNs and non-licenced nurses so that a clearer picture of the roles and responsibilities of these various groups will appear and their connection with patient outcomes can be determined.

Work Environment

Introduction. Nurses, including RPNs, work in a multitude of settings and under diverse working conditions. Perennially, a few articles appear in academic and professional journals that address specific aspects of the nursing environment, especially with respect to nurse satisfaction, commitment and engagement, and how these feelings influence nursing care delivery and patient care.

Research. Using the Practice Environment Scale of the Nursing Work Index (PES-NWI), Gikopoulou et al (2014) set out to "assess the nurses' work environment in a Greek hospital, concerning the five work environment aspects that emanate from the study instrument." (p. 269) The research method involved a cross-sectional administration of the PES-NWI to nurses in a major hospital in Athens. In all, a random sample of 174 nurses and "assistant" nurses completed the questionnaire. (Four types of nurses resident in Greece were described: Registered Nurses with baccalaureate degrees, Registered Nurses with diplomas, Specialist Nurses, such as oncology nursing, anesthesiology nursing, and mental health nursing, and Nursing Assistants with vocational training.) Generally, the nurses assessed their work environments as unfavourable. For example, respondents rated staffing and resource adequacy, nurses' participation in hospital affairs, nursing quality, and nurse manager ability as being low. The only favorable aspect of the nurses' work environment was nurse-physician collegial relations. Nurses who participated in a Continuous Education Program provided higher ratings on the PES-NWI, compared with those who did not. The researchers indicated that healthcare administrators and nursing managers have

to be cognizant of the working environment, recognize individual weaknesses and unfavourable aspects of the work, and centre their efforts on its improvement.

Cho et al (2014) took a two-pronged approach examining the relationships between average hospital length of stay (LOS) in various nursing units and the work demands experienced by nurses, and between work demands and nurses' health and overall job outcomes. Through a cross-sectional study, nurse survey data were gathered from a tertiary university hospital in Seoul. The convenience sample included 746 staff RNs working on 36 general, oncology, or intensive care units. The average LOS was categorized as short (the first quartile), medium (the second and third quartiles), or long (fourth quartile). Work demands (i.e., quantitative demands, work pace, and emotional demands), and nurses' health and job outcomes were measured using the Copenhagen Psychosocial Questionnaire. One main finding was that high average scores of work demands and poor health and job outcomes were reported by nurses in comparison with other occupations. Moreover, nurses in units with a short or medium LOS perceived higher quantitative and emotional demands, and a more demanding work pace. A higher work pace was also significantly related to greater work–family conflict. In terms of health issues on the part of nurses, greater quantitative and emotional demands correlated with poor self-rated health, greater sleeping troubles, work–family conflict, stress and burnout, lower job satisfaction, and a greater intent to leave. It was concluded that a shorter patient LOS was connected with higher work demands, and higher work demands were associated with worse nurse outcomes. Hence, excessive work demands should be avoided to prevent nurses' health and job outcomes from declining. Indeed, nurse managers have a responsibility to be aware of the negative impacts that reducing LOS can have on work demands and nurse outcomes. They should work with hospital administrators to hire additional nurses to meet increasing work demands. While the study is relatively well designed, even within the limited setting, the suggestion to add staff to offset the work demands seems to be somewhat beyond the study's scope, especially given the funding difficulties faced by many healthcare institutions.

In a research article from Finland (Turunen.et al, 2014), the views of nurse managers (NMs) and RNs on the patient safety culture in four acute care hospitals were evaluated. Data were accumulated utilizing a Hospital Survey on Patient Safety Culture (HSPSC) questionnaire. The convenience sample consisted of 109 NMs and 723 RNs. Both sample groups recognized patient safety problems and critically evaluated error-prevention mechanisms available in the project hospitals. Because they have more direct interaction with patients and hospital safety systems, RNs ended up being critical in their judgment of the safety culture situation in their units and institutions. The authors believed that there is a need to develop the patient safety culture of hospitals by openly discussing their requirements, by learning from mistakes, and by developing mechanisms to prevent them.

Kalisch and Lee (2014) investigated the relationship between nurse staffing and job satisfaction of RNs and NAs in 131 units at 11 hospitals in the states of Michigan and California. The units surveyed included: medical–surgical; intensive care; intermediate; rehabilitation; paediatrics and maternity; and mental health. Purposive samples of 3,523 RNs and 1,012 NAs were collected. Variables comprised: job satisfaction (from a survey); staffing (hours per patient day expended (HPPD) by RNs, LPNs and ANs; skill mix which is the HPPD completed by RNs as a proportion of total HPPD of all nursing staff); and patient acuity as determined by the Case Mix Index. HPPD was a significant positive predictor for RN job satisfaction. However, for NAs, a lower skill mix was marginally significant with a higher job satisfaction. Also, NAs reported a lower level of job satisfaction with higher levels of work experience. The conclusion drawn by the researchers is that "adequate staffing levels are essential for RN job satisfaction whereas NA job satisfaction depends on the number of assistive personnel in the mix of nursing staff." (p. 465) The implication is that healthcare executives must be cognizant of the different drivers of job satisfaction by assorted nursing service groups. Interestingly enough, the role of LPNs does not seem to have been addressed at all nor comparisons made with the other identified nurse groups.

The impact of workplace relationships on job engagement, personal well-being, organizational commitment, and employment turnover for nurses in Australian and USA hospitals was investigated by Brunetto et al (2013). The cross-sectional study entailed a self-report survey being distributed to five private-sector hospitals across Australia and two private–sector hospitals in the US. The randomly selected sample consisted of 510 Australian RNs and 718 American RNs. The variables incorporated in

the survey were: perceived organizational support; supervisor–nurse relationships; teamwork; employee engagement; well-being; organizational commitment; and turnover intentions. A series of hypotheses were developed to articulate the potential connections between the assorted variables. A multi-group structural equation model (SEM) analysis revealed important paths, including comparisons between countries. The results showed that most of the associations were confirmed for Australian nurses, that is workplace factors impacted engagement, except for the influence of teamwork on organizational commitment and turnover, and that of engagement on turnover. Alternatively, none of the SEM paths for supervisor–subordinate relationships was statistically significant for the US nurses, which also occurred for the paths between teamwork and organizational commitment or turnover. In discussing the results, the researchers proposed that well-being was a predictor of turnover intentions, meaning that healthcare managers need to consider nurses' well-being in everyday decision-making. If this is not done, the shortage of nurses may be exacerbated as nurses leave the profession.

Summary. Job satisfaction, work relationships, working conditions, and organizational culture remain key issues when it comes to the nursing environment. In previous reviews, the connection of environmental factors to patient outcomes was in greater evidence, whereas fewer studies of this nature were located for the present review. Still, more interest by researchers to incorporate LPNs/RPNs in their research designs is apparent. Moreover, as urged in previous years, the application of more sophisticated statistical techniques to environment issues seems to be occurring.

Nurse Categorization

Introduction. The College of Nurses of Ontario (CNO) recognizes two categories of registered nurses: RNs and RPNs. Professionals in these two nursing groups study from the same body of knowledge for their theoretical foundations. Nevertheless, the roles applied in delivering patient care differs substantially. RNs have a longer length of education allowing for greater foundational knowledge in which the depth and breadth of knowledge can be applied to a broader range of clinical practice, decision- making, critical thinking, leadership, and research utilization and resource management. The autonomous practice of RPNs with a shorter period of education, results in a more focused body of foundational knowledge (CNO, 2014). A few studies were uncovered that tangentially related to categorization but not in the direct fashion as originally envisaged.

Research. Employing the Delphi Method of subject matter expert analysis, Benton et al (2013) studied the current and future regulatory regime of the nursing profession. Their purposes were to: establish an international consensus regarding a definition of professional nurse regulation; stipulate the "key features" of a high performing regulatory body; and suggest the regulatory model best suited to accomplish the key features. The approach taken was to recruit a globally representative, random-stratified, sample of 75 experts who participated in a three-round policy Delphi study. The data collected were both quantitative and qualitative in nature. A detailed thematic analysis was applied to the qualitative data, with both non-parametric and descriptive statistical techniques were used to evaluate the quantitative data. While a majority of experts believed the current regulatory definition was adequate, the analysis showed that many thought the definition needed to be upgraded. The revised definition of professional nurse regulation proposed in the study was, "all those legitimate, appropriate and sustained means whereby order, identity, consistency, control and accountability are brought to practitioners through legally enforced, professional and voluntary action resulting in: enhanced protection of the public; efficient and effective trans-jurisdictional movement; and the ongoing re-alignment of professional practice to patient and societal needs." (See Figure 1 in Appendix B) At the same time, a set of 47 key features was developed that were desirable in high-performing nursing, regulatory bodies. Figure 2 in Appendix B gives the key features broken down by four categories: legislation advocacy and responsiveness; organizational and internal governance; external governance and public accountability; and responsibilities and functions. The researchers deemed the study to be an important step in enlarging the regulatory needs of the nursing profession. They admitted, however, that the area is a woefully underdeveloped, and recommended that additional quantitative research is necessary to settle the question of which regulatory model and associated administrative approaches would best fit with the nursing profession.

While the South African Nursing Council sets the scope of practice for nurses licenced to practice, Lubbe, and Roets (2014) examined the capabilities of nurses from the various categories of nurses that were permitted to practice in accordance with their regulated competencies. A quantitative, descriptive research design was employed. From a single primary care hospital, a standard audit form was completed for 152 patient files out of a possible sample frame of 849. They correlated data on the admission document, such as basic needs assessment tool, and reported progress, with the score on the Waterlow[TM] scale (which provides a risk assessment for the development of pressure sores in patients). Five levels of nursing care were identified in the study: Advanced Nursing Practitioner (specialist advanced nursing education); Professional Registered Nurse (university degree or diploma with 4 years training); Enrolled Nurse (three year college certificate); Enrolled Nurse Auxiliary (1 year certificate); and unlicensed care worker (6 months training). Two aspects of patient care were gauged according to the category of nurse completing the assessment. These were: patient planning assessment, which forms the framework for all subsequent patient care, and patient ulcer risk assessment. Although the patient planning assessment was supposed to be done only by RNs, it was found that 80% of the assessments were done by nurses not qualified to do so. Moreover, in 50% of the Waterlow[TM] (pressure sores) cases, the scale was inaccurately recorded. Not surprisingly, the researchers stressed that lower-category nurses and student nurses "should be allowed to perform only tasks within their scope of practice for which they are licensed or enrolled" (p. 58), even with the staffing problems created by the current shortages of nurses. Otherwise, patient care will likely suffer.

Corazzini et al (2013) recognized that LPNs provide most of the licenced nursing care in nursing homes and long-term care facilities. In their study, they described the regulatory differences in how LPNs contribute to nursing assessment, care planning, delegation, and supervision, as compared to how RNs practice in these same domains. They wanted to learn how the regulatory differences across various states relate to the quality of care in nursing homes. The research design involved a sequential, explanatory mixed-methods design of state nursing practice acts (NPAs) and Centers for Medicare and Medicaid quality measures of long-term residents. In the qualitative strand, 51 NPAs and related administrative codes were analyzed to classify how RNs and LPNs were guided in their practices. Then, the data were transformed through coding to quantitative measures that specified LPN and RN scopes of practice. In the quantitative strand, state NPA data from 50 states and the District of Columbia for 12,698 facilities were linked staffing and quality measures for cross-sectional, quantitative analyses. The results showed that states varied substantially in how NPAs guided LPN and RN scopes of practice. In particular, differences were found in quality indicators, including resident pain, catheter use, weight loss, and restraints, even when accounting for nursing home staff mix. The study concluded that resident care quality was better in states where the NPA clearly described LPN scope, but only when there was also greater RN availability. Classifying the scope of nursing practice regulations was seen to move beyond traditional staffing measures to inform an understanding of the outcomes of the RN-to-LPN staffing ratio on quality of care in nursing homes.

Summary. Categorizing different groups of nurses and deciding the practices for which each will be responsible remains largely uncharted territory in the scientific and professional literature, especially at the international level. Nevertheless, as articulated in the studies discussed above, appropriate regulation and employment of the various nurse categories is necessary to ensure the optimum employment of nurses.

Models of Care

Introduction. Models of care supply the philosophical roadmap that nurses use to guide them in their daily work. Nevertheless, these paradigms of care will shift over the years to accommodate new technologies and new learning. Some of these changes are reflected in the present review.

Research. A different model of organizing the nursing care was evaluated by Friese et al (2014). At a medical/surgical unit in the University of Michigan Health System, the normally centralized nursing station was replaced by four satellite pod stations. These satellites contained the necessary items and supplies for patient care and were located outside of patient's rooms. Eight patients were located in each pod. Patients were assigned two RNs who worked as partners. Three patient measures (satisfaction, call

button activation, and falls) and two nurse measures (satisfaction and overtime) were tracked. All measures, both patient and nurse, improved after the introduction of the pod stations. The researchers acknowledged that the study was exploratory in nature with a relatively small sample size in a limited setting. They stressed additional research would be necessary before the pod system was proven as a better nursing organizational set up. Nevertheless, they also suggested that the reorganization of nursing stations to a pod system was effective and might be considered for other units and hospitals.

Summary. Models of nursing care are an important topic of discussion for the nursing profession. Regrettably, as revealed from the dearth of published materials uncovered by the present review, the number and scope of empirical studies seems somewhat limited. Another underexploited research subject beckons to nurse academics and scholars.

Phase Two – EN Replication

Overview

In other reports, the role of the EN, as performed in a number of British Commonwealth countries, was discussed. Specifically, interest existed in contrasting the staffing, employment and responsibilities of ENs with those of RPNs or LPNs.

Unlike in 2012, where the search focused on the diminishing part played by SENs in the U.K.'s National Health Service, the 2014 review undertook a broader perspective of learning what ENs who work in New Zealand, Australia and South Africa actually do. Indeed, no mention was found in any research study of the SEN in healthcare during the present review period. Also of note was the lack of any research dealing with nursing Assistant Practitioners (APs) who had assumed some specialist, non-RN, nursing positions in the U.K.

Research

In addition to RNs, Twigg et al (2013) included ENs in their assessment of the economic effects that occur with an increase in nursing hours. They conducted a longitudinal study of a cohort of "multi-day stay" patients who were admitted to three teaching hospitals in Perth, Australia. A new "Nurse Hours Per Patient Day" (NHPPD) staffing initiative was introduced in the hospitals. Morbidity and staffing data were extracted from the hospitals' patient systems to analyze nursing-sensitive outcomes that occurred pre- and post-implementation of the new system. In both cases (pre and post), approximately 107,000 records were included. Increased costs were incurred with the implementation of the NHPPD owing to substantially more hours being accumulated by both RNs and ENs. However, the frequency of nurse-sensitive outcomes for patients dropped significantly (1,357 after implementation), especially 155 fewer failures to rescue incidents and 1,202 other events, including surgical wound infection, pulmonary failure, ulcer, gastritis, upper gastrointestinal bleed, and cardiac arrest. Nevertheless, the number of pneumonia cases rose somewhat, with 493 additional cases. When the data were analyzed on a "life-year gained" basis, the researchers estimated that 1,088 life years were gained by patients. At approximately AU$8,900 per life year, AU$9,683,000 were saved. The researchers believed that the NHPPD was an economical program, even with the extra nursing hour costs associated with it. Several limitations were reported, especially variations in staffing levels of non-nursing staff and nurse staffing differences across hospitals. From a review perspective, the study was interesting in that both RNs and ENs were included but segmentation of the results by these groups only dealt with the number of hours; the next step of assessing the hours by each group on outcomes was not taken.

Many Australian nurses, both RNs and ENs, work in general practice settings. This type of employment has grown extensively over the past decade. Halcomb et al (2014) described the demographic and employment characteristics of nurses in this role. In a longitudinal study, the researchers compared the results from a national, cross-sectional survey administered in both 2003-04 (n=284 nurses) and 2009-10 (n=235 nurses). Between the two periods, there was a larger number of respondents who reported that an increase in education or training would improve their confidence in performing their clinical duties. Likewise, a significant difference was found in the second group who expressed less confidence

regarding the counseling for mental health issues. When queried regarding the barriers to practice that they faced, legal consequences decreased, while lack of space, job descriptions, confidence in negotiating with doctors, and personal desires to improve their role increased. The study showed that some barriers to nursing in general practice have declined but others still must be addressed, especially around the issue of professional development. The researchers stressed that the effectiveness of primary care nurses who work in general practice environments will be improved by continuing to reduce concerns over clinical barriers. They also recognized that the small sample size and the self-selection on the part of respondents means the sample is not representative. Although they raised the issue that the differences in nursing practices and roles of RNs and ENs can cause complications when both are working in the same general practice setting, no attempt was made to segment the responses from the survey by these different groups.

In Australia, tertiary institutions (universities and technical colleges) provide the entry-level education for licenced nurses, both RNs and ENs. However, a recurring debate persists whether the academic programs produce "work ready" qualified nurses. Hegney et al (2013) identified the lack of any research to address the problem and set out to conduct a study related to the subject. Data were retrieved from 3,000 Queensland nurses (RNs and ENs) for a qualitative question posed in a survey conducted in 2007 and 2010. The question was, "what are the five key issues and strategies that you see could improve nursing and nursing work?" (p.1148) A thematic analysis was performed on the responses. The major sub-themes that flowed from the question were: perceptions of lack of clinical exposure and the need to increase the amount of clinical hours; the design of the curriculum; the place of preparation (solely within industry or a great focus on industry); financial consideration (students to be paid for their work); and, in 2007 only, the need for students to have better time management. The researchers indicated that a majority of respondents felt there should be changes in the preparation of nurses for their entry-to-practice especially as there was a perception that students had insufficient clinical experience, due to inappropriate curriculum content. Furthermore, they concluded that the workplace experience of student nurses was greatly influenced by the attitudes of the clinical nurses with whom they worked. A need was identified for a stronger partnership between industry and the academic institutions to address changes in the nursing curriculum.

Summary

The search for research material related to the SEN occupation in the U.K. healthcare proved fruitless, because no published articles or professional reports were found. It seems, therefore, that SENs continue to fade from the healthcare environment, as retirements and departures draw people away.

Likewise, when AP-associated searches were completed, no research pieces appeared. This result raises the question of the importance attached to these specialists by the U.K. healthcare system when little attempt is made to determine their function vis-à-vis other healthcare professionals and patient care.

Conversely, the ENs in other nations, especially Australia, garner a good deal of research effort. A number of studies emerged that addressed a number of issues relevant to the ENs and their contribution to healthcare in general and to the nursing profession specifically. Indeed, in several respects, ENs attract more attention than do similar nursing professionals in Europe and North America.

RPNAO Synergy Report

Overview

In February 2014, the RPNAO released a report entitled, It's All About Synergies: Understanding the Role of the Registered Practical Nurse in Ontario's Health Care System (Lankshear and Rush, 2014). The purpose of this report was to:

> *… invite nurses (RPNs and RNs), nurse leaders, nursing faculty, and other health care experts from around Ontario to share their knowledge and insights regarding the critical factors that*

> *support or hinder the appropriate utilization of RPNs and their ability to work to their full scope of practice as members of intra- and interprofessional health care teams. (p. 3)*

Research

A mixed methods approach was assumed, involving a survey (i.e.,The Registered Practical Nurse Role Clarity Questionnaire© (RPN-RCQ©) and a set of focus groups. The survey data were collected through a variety of means, including web-based tools, social media and snowball sampling, which yielded 1,101 completed surveys from RPNs, RNs, and from nursing faculty members. In all, ten focus groups were held, comprising 47 nurse leader participants who were invited to attend, either by teleconference or in-person.

Several key findings from the RPNAO report pertained to the elements and themes discussed in the 2014 literature review. For example, in terms of staffing and staffing mix, RPNs were perceived as valuable contributors to the nursing team. The discussions in relation to nursing scopes of practice and the attendant difficulties with misconceptions around RPN role confusion and inappropriate utilization of nurses match with the concept of nurse categorization and mirrors research from other countries and settings. The importance of nursing leadership mentioned in the report resonates as a critical factor in work environment satisfaction. Similarly, organizational practices and methods of operation are also connected with promoting a more positive work environment. Finally, although specific, external, research studies were not located in the literature search that directly link with models of care, the synergy report confirmed that collaboration, partnership, teamwork, and respect are fundamental characteristics of such models. Although not labelled as such in the report, several recommendations are offered that connect with the review's themes, including: providing intra-professional educational opportunities; updating the current nursing legislation and regulations by the responsible regulatory body; and developing organizational development strategies that foster education discussions, role clarification, and scope of practice dialogues.

Summary

The RPNAO Synergy Report is the only example of research dedicated to the roles and needs of RPNs discovered during the present literature review period. Even though it did not precisely concern itself with the five research themes of the review, particularly in relation to patient outcomes, the report's findings did touch on some of the issues and questions raised by other studies. Most importantly, the report contrasted the opinions and attitudes of RPNs, RNs and nursing managers through separate segmentations; an approach seldom seen in other research efforts.

WRAP UP

Synopsis

General

Although the search process entailed matching RPN nursing processes and practices with patient outcomes over the past 12 months, it proved difficult to find research studies and articles where the connections explicitly occurred. Hence, a broader scope became necessary, whereby RN, LPN, and EN connections were made with the RPN and patient outcome themes. A similar situation arose in the previous reviews as well. Still, valuable information was obtained to shed light on important nursing and RPN issues.

RPN Replication

As in previous years, the articles obtained under the education rubric tended to be directed towards the entry-level training received by RNs. Typically, attention was paid to the added value of a baccalaureate nursing degree as opposed to diploma or certificate levels of education. Comparatively few articles discussed the merits of RPN/LPN level education with respect to patient care outcomes. Yet, in the current review, most of the literature chosen demonstrated the theme of curriculum content change in

nursing programs. Incorporating evidence-based practices, improving clinical skills, and dealing with stress were reported as aspects of the education process that should be examined, emphasized, and expanded in the nursing curriculum.

RN staffing issues dominated much of the attention in the various pieces of research included in the review, which was also the case in prior reviews. Nurse staffing revolved around the number of nurses available, the mix of nursing types and the amount of time nurses spent with patients, in acute-care and long-term care situations. While the conclusions drawn mostly supported increases in the RN staff, a couple of studies attempted to segment their results with other categories of nurses, both licenced and unlicenced. Still, optimizing the delivery of nursing care to gain efficiencies and improve patient outcomes will require greater investigation of how nurse staffing is carried out.

Another relatively frequent topic investigated by researchers is the working environments of nurses. Of particular concern were job satisfaction, staff relationships, working conditions and organizational culture. Research efforts often correlate these issues with negative patient outcomes. As these environmental variables deteriorate, patient morbidity and mortality rise. Thus, the conclusions or recommendations supplied by these kinds of studies target improvements to environmental conditions as a means of boosting healthcare delivery. Whereas, in the past, the focus rested primarily on RNs, some research projects identified in the review included LPNs/RPNs as being amongst the nurse groups affected by their work environments.

Nurse categorization depends on the regulatory regime established in a given country to control who can be a nurse, and what practices different kinds of nurses are allowed to perform. Usually, the categories are divided according to whether nurses are licenced or unlicenced. Then, within the licenced classification, they are grouped by education level, professional roles and work responsibilities. It can happen, however, that lower qualified nurses will carry out procedures for which they are not trained and lack the necessary experience, especially when fiscal constraints impose hiring limits. The outcome can potentially result in patient harm. Government regulators, professional bodies and healthcare executives must collaborate to ensure these situations do not happen.

Refining and improving professional models of nursing care remains a key objective of the nursing profession. Indeed, should this activity not be pursued by the profession, it may enter a state of stagnation. An important part of the model development process is meshing RNs with RPNs into a coherent whole. Nevertheless, other operational models involving ergonomic and physical layouts also have a practical application in delivering nursing care.

EN Replication

Little research interest seems to have been generated in the activities and pursuits of SENs in the U.K. Likewise, APs were not the subject any research discovered through the review. However, ENs in other countries of the British Commonwealth, especially Australia, appeared to enjoy an active professional life and received greater research notice.

Greater acceptance of the EN role in the overall delivery of nursing care is evident when they are combined in studies with RNs and comparisons made of their relative contributions to patient well-being. Each nurse category can be appreciated for complementing the skill sets of the other. Still, challenges and conflicts appear to surface in circumstance where ENs assume some RN tasks to reduce costs, particularly in nursing homes or general practitioner settings. And, members of both licenced nursing groups have concerns regarding aspects of their education and training.

RPNAO Synergy Report

The literature review was enhanced by internal information furnished by the RPNAO Synergy Report. The report highlighted the value that RPNs add as members of the nurse staffing mix, even if the perceptions of the RPN scope of practice are somewhat uncertain amongst the nursing community. Nonetheless, effective leadership and sound organizational practices support a progressive nursing environment. Similarly, the foundations upon which models of care are built are strengthened by

collaboration, partnership, teamwork and respect throughout nursing staff members. As a baseline study, the synergy report affords the opportunity of tracking changes in the RPN profession, as it is replicated in the future to compare changes as they are instituted.

Limitations and Gaps

As has occurred previously, the criteria upon which the review was based limited the number of studies revealed through the literature search. In fact, search terms were altered to expand the number of articles discovered. In some cases, the contents of a given piece of research may have exhibited a slightly tenuous connection with the established criteria. Should another review be considered for next year, a discussion about revising the search criteria might be advisable.

Methodologically, a number of the studies included in the review displayed specific deficiencies. In particular, small sample sizes, limited research settings, and deficient project designs acted to reduce the impact of research findings. Clearly, although having research that presents sound technical approaches is desirable, the reality is that practical considerations frequently hinder the application of the best research methods. However, the review will continue to locate the best nurse research available.

APPENDIX A – REFERENCES

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APPENDIX B – BENTON ET AL NURSE REGULATORY FIGURES

Purpose
Inherent in any profession is a set of values and standards that the individual will adhere to. This means the competent and autonomous registered nurse will deliver consistently the required level of practice. Professional regulation provides the framework to promote and secure these values and by so doing helps create the identity of the profession through the behaviour and actions of individual practitioners. It is this order and consistency of practice that provides the benchmark against which the individual is held to account thereby providing the basis of the social contract between the nurse and citizen.

Means
A wide range of means elaborated by government, regulatory bodies, professional associations and private as well as public employers may individually or acting in concert, be used to regulate the nurse. These means can include setting educational and practice standards, specifying and enforcing ethical and conduct codes, providing guidance and advice, having mandatory relicensure processes that specify continuing professional development; minimum practice hours and/or evidencing continuing competence; specification of scopes of practice; in some cases limitation of certain acts or practices to those practitioners who meet or have completed required training and assessment.

Subjects
These are the focus of the regulatory bodies activity the individual nurse or in some cases a range of different practitioners including licensed practical nurses, registered or licensed nurse, advanced practice nurses and in some cases support workers.

All those legitimate, appropriate and sustained means whereby order, identity, consistency, control and accountability are brought to practitioners through legally enforced, professional and/or voluntary action resulting in:

- enhanced protection of the public;
- efficient and effective trans-jurisdictional movement; and
- the ongoing re-alignment of professional practice to patient and societal needs.

Mechanisms
The purpose of regulation can be achieved through either legally enforced or voluntary approaches such as credentialing. Increasingly the range of legally enforced approaches is becoming more extensive going well beyond simply removal of the license to practice but may include, sanctions, suspensions, retraining etc.

Outcomes
These are the desired results of the regulatory process and are increasingly explicitly stated in the establishing legislation of any regulatory body. The first point is almost self-evident but was not in early acts and laws clearly and explicitly stated. This outcome should be at the heart of regulatory body activities. The second point acknowledges that nurse migration has increased and there is now a need to have efficient systems capable of scrutinising the migrant nurse's credentials and suitability to practice. Delays, particularly when there is a shortage of nurses in a country or during times of disaster may inadvertently result in reduced patient safety due to lack of nurses. However, it is important that as well as being efficient the system is effective. Identifying those nurses who are not competent to practice, do not meet the required educational standards or whose behaviour and conduct places patients at risk and consequently refusing such individuals a licence to practice. The final point focuses on the requirement for regulators to be externally focused. Ensuring that practice standards and ethical behaviour keeps pace with evolving health systems as well as better educated and informed citizens who may have changing societal values and norms.

Figure 1. Benton et al (2013) final revised and extended definition of professional nurse regulation.
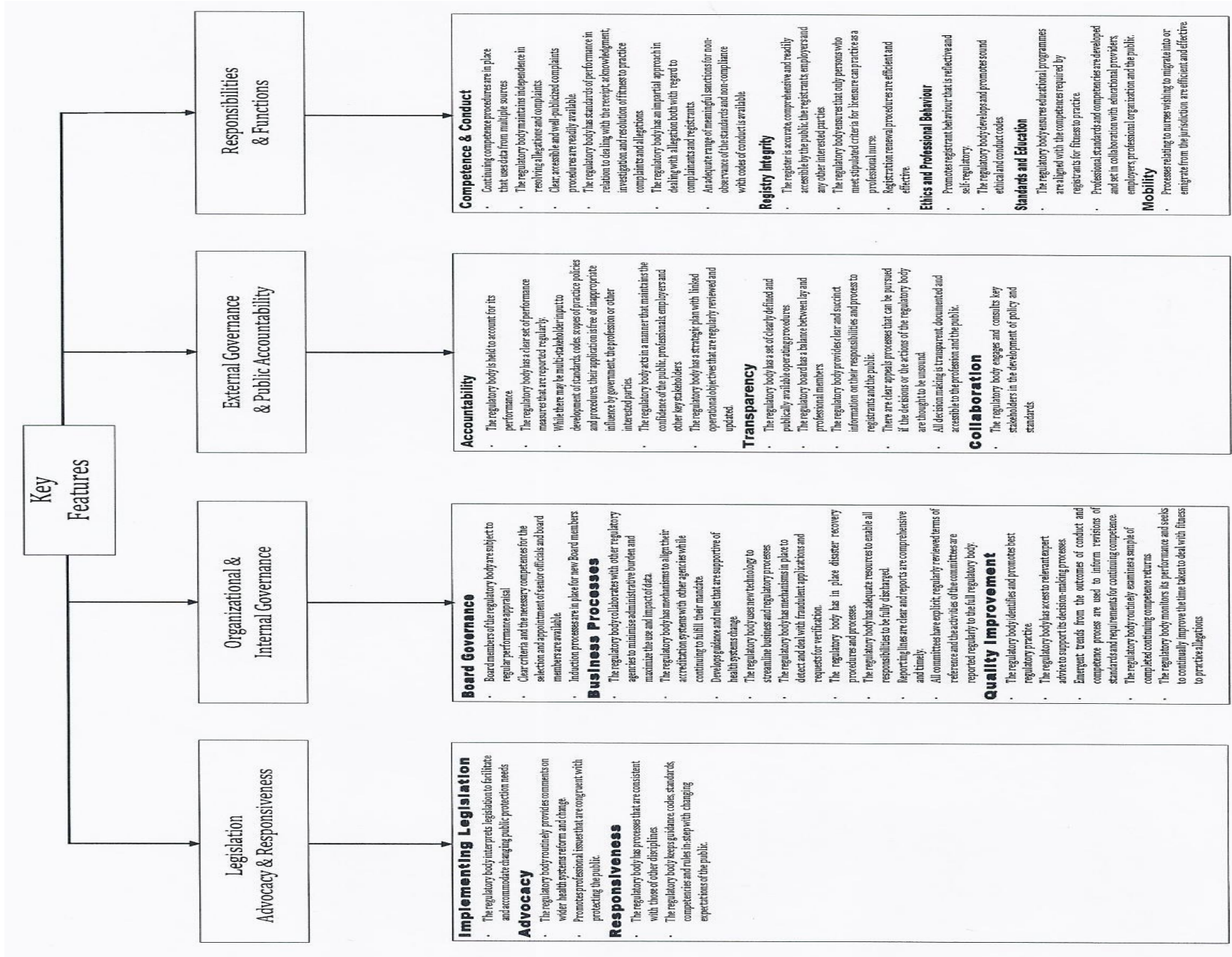
Figure 2. Benton et al (2013) Final thematic mapping of the 47 key statements relating to high-performing regulatory bodies.