

# A critical synthesis of literature review on the selected John Hopkins Nursing Evidence Based Practice Model.

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**Abstract** Nursing administrators of various healthcare organizations are required to improve nursing practice outcomes. A mean toward the improvement of the nursing practice outcomes is research utilization among professional nurse. To understand internal organizational factors that increase nurses' research utilization can help the nursing administrators in managing their organization to have a climate of evidence based practice and to facilitate the practicing nurses utilizing research evidence in their practice. This study aim to examining relationships between internal organizational factors and research utilization in nursing practice, and reveal the relationship strength. In addition, to map the internal organizational factors against a well reported available model of evidence based practice. Critical synthesis of literature review was conducted. There are five key activities: searching, retrieving, categorizing, analyzing and synthesizing. Electronic search and retrieve of two online databases and a manual search of specific journals were done. Inclusion criteria of the selected studies were; 1.Published in English, 2.Have internal organizational factors as independent variables and research utilization as a dependent variable, and 3.Relevant to clinical nursing practice. The steps of categorizing and analyzing include the appraisal of the selected studies for quality of design, sample, measurement and statistical analysis. Lastly, semi-structured data abstraction tools and group consensus were used to synthesize findings. Eleven articles met the search criteria. They range from case reports to quantitative studies. Eight factors were identified as having a statistically significant relationship with research utilization, namely organizational climate, education & research training, role and responsibility, access to human resources, access to material resources access, support, time, and multi-facet access to research related resources. The strength of the relationship between the eight internal organizational factors and nurses' research utilization is low to moderate level. The results of internal organizational are fit to dimensions of internal

**organizational factors in the selected John Hopkins Nursing Evidence Based Practice Model.**

**Index Terms**—research utilization, nurses, internal organizational factors, critical synthesis

## I. INTRODUCTION

Global concern of the quality for healthcare delivery with the best available evidence to base practice is increasing and becoming the leading health care provider issue of this decade [1]. It has been accepted that research utilization (RU) in nursing practice is one high optimum strategy to enhance quality of nursing care [2].

In general, RU refers to the use of research base for practice. Research finding is the strongest type of evidence in which decisions about nursing practice should be made. When the strongest available evidence is considered, the odds of doing the right thing at the right time for the right patient are improved [3]. The utilization of research findings could produce better patient outcome in healthcare organization because patient-care decisions are conscientiously based on the best scientific evidence [4-5]. This RU is not only a systematic approach for decision making to achieve the best practice, but also demonstrates nurses' accountability. It has been accepted as an essential activity among professional nurses for quality of care enhancement and representative of professional development and autonomy [6, 2].

Although RU is advantage and significant for nursing practice, previous RU investigators argue that the use of this knowledge is not reflected in the care that patients receive [ 7-10] Around 30-40 % of patients in the United States and Netherlands receive care that is not based on current scientific

evidence [11]. Only a small proportion of research findings are translated into clinical nursing practices [12].

This gap between what is known and what is done are exist. Implementing change, getting research into practice and improving the quality of patient care are complex, difficult, and demanding processes, which do not follow prescribed and linear paths (Rycroft-Malone et al. 2004). In nursing, RU has been proposed as the use of research findings in any and all aspects of one's work as a registered nurse [13]. In addition, Titler et al. (1994) described RU as the process of using research findings in practice, encompassing the dissemination of scientific knowledge, critique of studies, synthesis of findings, determination of applicability of findings, application or implementation of findings into practice and evaluation of the practice change. For this study, RU is conceptualized as both indirect use (using research findings to influence thinking at a general level) and direct use (the application of research findings in clinical practice) [14-16].

Many individual and organizational factors have been suggested to influence RU in health care [17-18]. Traditionally, inquiry into the dissemination and use of research findings in nursing has been interested in individual determinants of RU. In a systematic review of the research literature on individual determinants, factors such as beliefs and attitudes, education, information-seeking and professional characteristics were found to be associated with RU [17] Less attention has been paid to the role of organizations in promoting research use in clinical nursing practice [19-20].

More than a decade, nurses have been struggling with shortages in staffing. Organizational programs that emphasize conducting nursing research and evidence-based practice can be expensive. Often programs that support research efforts tend to be the first to go or become diminished when hospital administrators are faced with budget control [21-24] Despite these shortages and financial limitation, hospital cultures continue to emphasize practices that are evidence based [21,25-27]. Previous studies has been focused on the barriers that nurses face in research utilization using the BARRIERS to Research Utilization Scale developed by Funk, Champagne, Wiese, and Tornquist [28]. These studies and review articles have shown that the top barriers have been, not having the time to read articles or be involved in research activities, lack of support for research activities, and not possessing the skills to critique or understand research results [29-32].

Stetler (2003) also emphasized the importance of nursing administrators becoming attuned to the needs of staff to promote the translation of nursing science by assessing current programs as well as the capacity of their staff. Despite recent evidence showing a more positive attitude (nurses becoming more aware of research findings and willing to incorporate them into practice), a gap continues to exist between publication and utilization [33-37].

Less attention has been paid to the role of organizations in facilitating research use in practice [3-4,17]. Rogers (1995) claimed that in many cases an individual cannot implement new ideas before the organization has formally adopted them [38-40]. Many researchers claim that internal organizational

factors are important in predicting research utilization [23, 41]. The concern of internal organizational factors is also reflected in the Johns Hopkins Nursing Evidence Based Practice (JHNEBP) model, initially proposed by Newhouse et al [3].

The full JHNEBP Model is depicted as an open system which the utilization of evidence (which research findings is included as a type of evidence) among nurses are influenced by internal and external organizational factors. Specifically, the internal-organization factors are composed of organizational culture (values and beliefs), environment (leadership support, resource allocations, patient services, organizational mission, organizational priorities, availability of technology, library support, finance, and so on) as research climate, equipment and supplies, staffing, and standards (the organization's own policies, procedures, and protocols) [3]. External- organization factors are accreditation, legislation, quality measures, regulation and standards (professional standards). This model positions nurses to be a significant influence on health-care decisions and a partner in improving quality of care. It has been distributed thorough details, focusing on general evidence and is implemented many projects within the Johns Hopkins institutes only. However, this model mentioned several factors similar to those mentioned in the previous studies. In addition, this model won the Sigma Theta Tau International Research Utilization awarded in 2005 .

The literatures related to RU reveal that there are various determinants of external and internal organization factors which are interplay and influence on RU among nurses in organization. External factors are beyond the reach of the nurse administrator while those internal are reachable, either directly or indirectly. The nurse administrators have to prioritize and focus on key internal-organization factors involving RU among professional nurses. Through this, they effectively further their management. Therefore, understanding of predicting factors, especially the internal ones, of RU among nurses is needed. This study purposes descriptions of if and how relationship among the internal organization factors and RU from previous studies in nursing field. The results derived from the literature review are mapped against-- internal organization factors, elements of the selected model, as described by Newhouse et al [3] to affirm their fitness.

## II. METHODOLOGY

Design: this study is an applied systematic review using a critical synthesis processes. Five key activities were done as follows: searching, retrieving, categorizing, analyzing and synthesizing.

### 1. Searching

The search strategy was guided by a preliminary literature review since 1993 to 2013 which revealed that several internal organization factors had an association with RU in nursing (Table 1).

**Table 1** Internal organizational factors identified by an initial literature review.

Environment
Culture
Equipment/supply
Staffing
Standard
(Funk et al. 1991, Pettengill et al. 1994, Rizzuto et al. 1994, Titler, et al. 1994, Funk et al. 1995, Shaffer, 1996, Hatcher & Tranmer 1997, Nilsson Kajermo et al. 1998, Humphris & Littlejohns 2000, Parahoo 2000, Retsas 2000, Sitzia 2002, McClearly & Brown 2003, McCloskey2008)

This informed the selection of inclusion criteria for the electronic search of online databases (ISI web of Science and Pro-Quest Dissertation &Thesis) and hand search from selected journals and website (Table 3). An overview of the key terms for searching strategy is given in Table 2 based on our knowledge of the literature and anticipated sources of research in this field The important key terms for this study are pointed in inclusion criteria.

**Table 2** Key terms for Searching strategy from databases

Sources:ISI Web of science, ProQuest dissertation &Thesis	
OR	AND
Research Utilization	Nursing practice
	Professional nurses
Organizational factors	Hospital nurses
	Clinical Nurses
	Nurse

**Inclusion criteria** Papers in English, published up to March 2013, that met the following inclusion criteria, were reviewed: the study population consisted of nurses working in clinical practice; papers had to report primary research; studies reporting a measure or analysis of the relationship between internal organization factors and RU, where in studies with a quantitative design. RU was operationalized as the dependent variable and internal organization factors as independent variables. Then all key terms are environment, culture, staffing, equipment/supplies, standard, research utilization, and nursing practice.

**Table 3** Manual search strategy

Journal(1993-2013)
: International Journal of Nursing
: Journal of Advanced Nursing
: Journal of Nursing Management
: Journal of Clinical Nursing
: Nursing Research
Website of research institute
: Knowledge Utilization Studies in Practice (KUSP)

## 2. Retrieving

The retrieving is a simultaneous activity of saving or install information into personal computer while results of searching appear and shortly after first screening occur.

**Screening** After removal of duplicates the first two authors reviewed 280 topics from the search of online databases. A total of 84 topics met the inclusion criteria. Another 5 titles were found through the manual search for a total of 280 titles retained. Available abstracts for these topics were then screened using the inclusion criteria. An abstract was rejected if it failed to meet one of the criteria. Of the 48 abstracts that met the inclusion criteria, full manuscripts were retrieved for screening. Of these 48 abstracts, 18 were excluded as they reported use of the Barrier Scale [26] but with no measurement of RU. Ten studies on the implementation of clinical practice guidelines were also excluded as they did not report a relationship between internal organization factors and the use of research-based guidelines. Nine papers were excluded because of lack of clarity in the methods or results, specifically the measurement of research use or internal organization factors., therefore, the 11 studies that remained were assessed for methodological quality in next two steps of analyzing.

## 3. Categorizing

The categorizing is an activity of data grouping. After screening, the include studies can be grouped into eight categories : 1) Organizational climate, 2) Education/research training, 3) Role & responsibility, 4) Access to human resource, 5) Access to material resources, 6) Support, 7)Time and 8) Multi-facet access to reach for several sources.

**Table 4** Number of paper from searching & retrieving.

source	Search terms (topic)	Number of paper
1.1 ISI web of science	Environment & research utilization	43
	Culture & research utilization	48
	Staffing & research utilization	28
	Equipment/supplies &research utilization	16
	Standard & research utilization	25
1.2Pro-Quest Disser-tation &Thesis	Environment & research utilization	21
	Culture & research utilization	41
	Staffing & research utilization	18
	Equipment/supplies &research utilization	24
	Standard & research utilization	11
1.3 manual	References from key articles	5

search		
Total		280
First selection		84
Minus duplicate		48
Second selection		20
Final selection		11

#### 4. Analyzing

The analyzing is series activities of quality assessment and data extraction as follows.

##### Quality assessment

The 11 studies that met the inclusion criteria were assessed for methodological strength using two quality assessment tools. The first was the Quality Assessment and Validity Tool for Correlation Studies [12-14]. All 11 quantitative studies were assessed using this tool. The instrument used 13 questions to evaluate the design, sample, measurement and statistical analysis, for a total of 14 possible points. Twelve questions were of dichotomous answer format ('yes' = 1, 'no' = 0). One exception was when internal organizational factors were measured by self-report; the study received a score of zero on that question. Whereas, when the internal organization factors were measured by independent observation, the study received a score of two. Studies scoring 0-4 were rated as low quality, those scoring 5-9 were rated as medium quality, and those scoring 10-14 were rated as high quality studies.

The second tool was the Quality Research Appraisal Checklist [48]. This instrument used 41 evaluation criteria for a total score between 0 and 123 points. Studies with a score of 0-41 points were rated as low quality; those with a score of 42-82 points were rated as medium quality; and those with a score of 83-123 points were rated as high quality.

##### Data extraction

Following the quality assessment, 11 studies remained for data extraction. Table 6 illustrates the search and retrieval process.

The following data were extracted from the 11 studies in the final inclusion group: author, journal, subjects/sample, theoretical model/framework, study design, research utilization measure or instrument, , scoring, validity, reliability, , in factors, relationship, results and discussion or recommendations. One researcher in the RU field were approached to provide feedback on the search strategy and the list of included studies. She supported the process used and identified no gaps. To achieve reliability in every phase of assessment, the first two authors collectively read one-third of the topics, abstracts and studies. Consensus was

effectively achieved in most cases in determining if a study was included or excluded. When there was disagreement, the articles were re-reviewed and discussed ,and the opinion of others in the research group was sought leading to an agreement in the end.

**Table 5** Summary of quality score of the include studies for extraction studies.

Author	journal	Quality score
<i>Quantitative studies (point range 0-14)</i>		
Varcoe& Hilton (1995)	Canadian Journal of Nursing Research	9
Tsai (2003)	International Journal of Nursing studies	8
Tsai (2000)	Tsai (2000) International Journal of Nursing Studies	7
Wallin et al. (2003)	Journal of Advanced Nursing	7
Rutledge et al. (1996)	Oncology Nursing Forum	7
Hatcher &Tranmer (1997)	Canadian Journal of Nursing Administration	7
Butler (1995)	Canadian Journal of Nursing Research	6
McCloskey (2008)	Clinical research	6
Rodgers (2000)*	Nurse Education Today	6
McCleary & Brown (2003)	Nurse Education Today	5
Champion & Leach (1989)	Journal of Advanced Nursing	5
<i>Qualitative studies (point range 0-123)</i>		
Rodgers (2000)*	Nurse Education Today	81
Score intervals of quantitative research: 0-4 = low, 5-9 =medium, 10-14= high; Score intervals of qualitative research: 0-41 = below average, 42-82 = average, 83-123 = superior. *Study combining qualitative and quantitative design.		

#### 5. Synthesizing

This activity means the combination of different perspectives in order to create new knowledge or concept.

While some information are not exactly determined to point them in which domain. Critical thinking and re-reading was integrated. The definition of eight categories are synthesized, defined and mapped to fit the selected model. The synthesis results are summarized in table 7.

### III. RESULT AND DISCUSSION

**1. Quality of studies:** No single included study was assessed to be of high methodological quality. Six quantitative studies and three qualitative studies of low

methodological quality were excluded. Excluded articles essentially had shortcomings in measurement and analysis. The excluded qualitative studies did not clearly report or discuss the relationship between organizational factors and RU. Rodgers [41] used both a qualitative and quantitative design (the qualitative section exploring the quantitative outcomes), and was counted as one study. In total, eleven studies were considered to have an acceptable level of quality. The results of the quality assessment are reported in Table 5. All included studies showed limitations either in design, sampling, measurement or statistical analysis (Table 6). All studies were designed as cross-sectional surveys, with one study using a quasi-experimental design. Seven studies used probability sampling and only one justified sample size. All studies used self-reported instruments and only five of 10 studies had a response rate above 60%. Three studies employed a theoretical framework for guidance. Internal organization factors and research utilization This review identified 11 study findings that had a statistically significant relationship with RU. Because of conceptual overlap among the study findings, they were clustered into eight internal organization factors. A summary of findings is presented in Table 7.

## **2. Internal organizational factors**

After critical synthesis the literature review, it can be categorized the internal organizational factors into eight groups and defined each group as follows;

### **Organizational climate**

Organizational climate refers to surrounding environment which enable members in organization to achieve mutual goal. Existing studies revealed various results as follows. Varcoe and Hilton [32] reported a statistically significant relationship between research climate (an environment where research use is encouraged and recognized) and research utilization, whereas Rodgers (2000) found no difference between research use in a teaching and non-teaching hospital.

### **Education/ research training**

Education/ research training was defined as degree gained from institutes and research training learned from actual practices. Education was considered to be an internal organization factor in studies where the organization provided nurses with specific education. Educational activities including research methods, statistics courses and training in RU over several days were reported. Three studies examined education [35-38] of which McClearly and Brown (2003) reported both statistically significant and non-significant effects of different research courses on RU[44]. Rodgers (2000) found that the number of study days spent on nursing research was significantly related to research use[45]. However, during focus group interviews, participating nurses reported that study days were not as engaging and helpful as accredited courses[27]. However, McCloskey (2008) revealed that higher education, higher research use [47].

### **Role and responsibility**

Role and responsibility are focused on range of job responsibility which are associated with research conducted previously. Base on the review, two studies pointed to a relationship between the role of the nurse and RU (Rutledge et al. 1996, Wallin et al. 2003). Rutledge found a statistically significant relationship between the extent of job responsibility and RU. Wallin investigated the effect of nurses' sustainability in participating in quality improvement (QI) teams. Nurses who were involved in QI work over a full three-year period reported more implementation of research into practice than those who had earlier discontinued their QI work[37-39].

### **Access to human resources**

Access to human resources refers to the ability to reach competent staff who are always available to provide assistance in terms of research methodology and clinical practice. Mixed results were reported regarding access to human resources and its relationship to RU [32-36].

### **Access to material resources.**

Access to material resources is defined as the ability to get the valuable information for research such as journal, research articles or nursing journals. The results of two studies that examined access to material resources were equivocal [35-36].

### **Support**

Support is described as factors which enable nurses to conduct research, categorized into three groups as follows;

- 1) Conducting research support is focused on promoting the nurses' activities relevant to research process.
- 2) Human support means encouragement and reinforcement to do research based practice from colleagues, supervisors and nursing care team.
- 3) Material support is defined as the availability of useful facilities within organization such as internet, intranet and libraries which can be easily accessed.

Previous studies revealed significance of supports for RU as follows; Six studies examined various types of support, which were grouped into human support, material support and support for conducting research. Mixed results were reported regarding human support [32-37]. The number of conferences that nurses attended and supportive infrastructures were ways of conceptualizing material support. Two studies reported a statistically significant relationship between material support and research utilization [27,34]. Two studies that examined the relationship between participation in research (initiated by the organization) and use of research reported diverse results [15,23].

### **Time**

Time is focused on allocating appropriate time for nurses who are responsible for certain responsibility in order to complete the research. Some studies detailed significance of time for RU as follows; Rodgers (2000) conceptualized time as time on duty and time off duty to read research reports. Approximately half of the nurses in

that study spent at least 4 hours per month off duty studying research, which had a significant association to RU [35-37].

#### **Multifacet access to research related resources.**

Multifacet access to research related resources means the ability to gain valuable information related to research from several resources. a multi-faceted subscale called availability, which had a statistically significant association with research utilization. The scale included items such as access to research findings, presentation of research findings and time to read research [23-28].

### **3. Strength of relationship between internal organization factors and research utilization among nurses.**

To assess the strength of the relationships between the identified internal organization factors and research utilization, each factor was examined in light of both statistically significant and non-significant findings and the results were found to be largely inconclusive. Because of these mixed results and the moderate quality of included studies; the strength of evidence for individual factors could not be ascertained. In addition, methodological limitations in reviewed studies hindered an investigation of inter-correlations among the factors associated with research utilization.

### **4. The selected JHNEBP model**

This study used the selected JHNEBP model key elements as an underlying theoretical structure. The 11 study findings categorized into eight factors were mapped to the components of internal organizational factors, understanding of the prevailing culture, the nature of human relationships as summarized through leadership roles and the organizational approach to routine monitoring of systems and services – evaluation. All identified factors could be mapped onto either. Eight internal organizational factors had statistically significant associations with nurses' RU. However, it was not possible to determine the ranked importance of these factors because of the mixed results and methodological limitations. The findings suggest that internal organization factors may influence the development of environments that are conducive to implementing research in practice, and should be investigated further.

### **5. Methodological quality**

In general, included studies were limited by their design; most were cross-sectional surveys based on self-reports from participants. This field of research would benefit from more effectiveness and intervention studies, employing experimental and longitudinal designs. Designing studies where internal organization factors are altered to determine the impact of RU should yield more robust findings. The ultimate aim of inquiry about RU is to determine the impact of RU on patient outcomes.

### **6. Issues about Internal organizational factors and research utilization**

Clarity of the meaning of concepts used in research is essential before claims about study results can be made. The climate in which nursing practice occurs has been described as unbounded, because it is influenced by financial, social, political, economic, historical and psychosocial factors [17] McCormack et al. (2002) also suggest that other characteristics such as decision-making within nursing, staff relationships, organizational systems, power discrepancy and the authority of the organization to innovate are important considerations in any expression of the concept of internal organizational factors. Measuring the concept of internal organizational factors is challenging because the environments within which nurses work are so complex, multi-faceted and varied based on the influences described above. Existing researchers in the field argue for the value of internal organizational factors but rarely go beyond describing its importance [20-24]. Previous attempts to measure the nursing practice environment have led to the development of numerous instruments [31-35] each of which appear to measure different constructs [41-42]. Cummings et al. concluded that the overall concept of the nursing practice environment remains poorly specified and inadequately measured, recommending that the most useful advances in ongoing development of this concept will result from advancing and testing robust theory about the relationships among specific features within the practice environment or context. The findings of this review will contribute to the development of theory related to how specific contextual features influence nurses' research utilization.

The selected JHNEBP model were used as an underlying theoretical structure for the internal organizational factors, although this model is still in the developmental phase and not all components have been clearly conceptualized. The mapping of factors to the dimensions of environment, culture, staffing, equipment/

supplies and standard was, to some extent, subjective because factors like 'nurses' involvement in data collection' and 'nurses' participation in research' may have fit under all five dimensions. However, all contextual factors fit into one of the dimensions of the selected JHNEBP model, suggesting that all the five factors have a positive influence on research utilization by nurses. No factor could be mapped to the dimension without the explanation. Overall, studies that examine how audit and feedback relate to research use are infrequent. Another reason may be due to the lack of studies examining the implementation of research-based guidelines that met our inclusion criteria. We do not claim that this mapping exercise provides construct validity for the selected JHNEBP model; this study was not designed with a theory validation objective. However, this selected JHNEBP model is a fruitful starting point for better understanding of the impact of internal organizational factors on research

utilization and more studies should explore this area of inquiry.

In addition to the complexity of measuring the concept of internal organizational factors, the measurement of the concept of research utilization varied in the studies in this review. Three studies used the Research Utilization Questionnaire (RUQ) (Champion & Leach 1989). This instrument measured research utilization using a multi-item scale, which was not tested for construct validity (Estabrooks et al. 2003b). The lack of construct clarity and a theoretical framework for the RUQ made it difficult to grasp what was measured by the research utilization subscale. Other reported measures were the Nurses Practice Questionnaire (NPQ) based on Rogers's stages of innovation adoption and the Edmonton Research Orientation Survey (EROS). The NPQ used a process approach to measure use of specific nursing practices, implying that 'reading and appraising research reports' has similar weight to 'using research in practice'.

#### IV. CONCLUSION AND SUGGESTION

The main purpose of this study was to obtain a better understanding of the state of evidence on whether internal organization factors influence nurses' RU. Based on the analysis of findings from the final group of included studies, authors recommend the following:

1. More theory and research are needed to conceptualize and measure internal organization factors for research utilization in nursing practice, within JHNEBP and other frameworks.
2. Observational and intervention studies with less reliance on self-report would strengthen the evidence obtained from research in this field.
3. The impact of RU on patient outcomes has to be assessed, as well as the sustainability of practice changes when implementing research findings.

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