Developing a Valid and Reliable Measure of Research Utilization

Measurement Technical Report

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November 2008

ACKNOWLEDGEMENTS

CITATION INFORMATION

When citing this report, please cite as:

Squires, J.E., Adachi, A. M., & Estabrooks, C.A. (2008). Developing a Valid and Reliable Measure of Research Utilization Technical Report. (Report No. 08-02-TR). Edmonton, AB, Faculty of Nursing, University of Alberta. (ISBN: 978-1-55195-235-2)

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EXECUTIVE SUMMARY

This document is the final report of a research study funded by CIHR in 2005, the *Developing a Valid and Reliable Measure of Research Utilization* study. The purpose of this study was to develop and assess an instrument that measures research utilization among health professionals; specifically those providing direct nursing care in acute, long term and home care settings. The specific objectives of the project were to: (1) to clarify and validate the construct of research utilization and (2) to develop observable indicators of research utilization, and (3) develop a set of items that measure research utilization.

A qualitative approach using focus group interviews with several different "expert" groups was used. The expert groups included: (1) local experts (i.e., the project team members), (2) international nursing experts in the area of research utilization, (3) non-direct care nursing service providers (i.e., managers, educators, nurse specialists) and (4) direct care nursing service providers (i.e., registered nurses, registered psychiatric nurses, licensed practical nurses, nurse aides). The study was conducted in three phases: phase 1 (local expert focus group), phase 2 (international expert panel focus group), and phase 3 (non-direct and direct care nursing service provider focus groups).

Through an engagement process with scholars in the research utilization field (phase 2: international expert panel focus group) we were able to develop and reach consensus on definitions for research utilization and develop a preliminary list of indicators for research utilization. Most importantly, however, we were able to develop a preliminary conceptual diagram visually depicting the construct of research utilization on which we will build future work.

Key findings from the study include:
- There is considerable awareness among nursing service personnel about the importance of using evidence or research in practice.
- The term 'research utilization' is not commonly used by nursing service personnel. Instead, a variety of other terms are commonly used to refer to the construct of research utilization (e.g., evidence-based practice (medicine), research-based knowledge, best evidence).
- Research utilization is viewed as something that is dynamic, growing, and moving; and not as a static phenomenon.
- There are two generally accepted forms of research utilization: instrumental and conceptual. Instrumental research utilization is equated with observable action while conceptual research utilization is equated with thinking.
- Research utilization is viewed more abstractly by higher levels of nursing service personnel (as evidenced by the provision of less concrete examples of research utilization by managers/educators/nurse specialists compared to registered nurses/registered psychiatric nurses and licensed practical nurses/nurse aides).
- General research utilization and instrumental research utilization can and probably should be measured concurrently using a variety of techniques including self-report (survey and/or interview), observation, and/or document analysis.

1.0 INTRODUCTION

Research utilization is the implementation of research-based knowledge in practice. Our research team believes that research utilization is one indicator of an optimum practice environment, in which improved patient outcomes are evident.

Although a considerable understanding of the construct of research utilization has been acquired over the past thirty years, an assessment of the validity and reliability of research utilization measures has not been adequately addressed and remains an unresolved problem in the field. Our review of the literature confirms that the measurement of research utilization is underdeveloped. In summary, existing instruments have two major problems. First, early efforts to measure research utilization were not based on prior theory or conceptualization. The lack of progress in this area is a major obstacle to establishing a sound measure of research use. Second, existing instruments lack psychometric assessments based on measurement theory; construct validity is a serious and unresolved problem in the field. As a result, the primary objectives of this study were to: (1) clarify and validate the construct of research utilization, (2) develop observable indicators of research utilization, and (3) develop a set of items that measure research utilization.

To address these objectives data were collected using focus groups. These focus groups were composed of local experts (i.e., the project team members), international nursing experts in the research utilization field, experts in nursing across role specific subgroups (i.e., non-direct care nursing service providers) and direct care nursing service providers. Discussions from all focus groups were recorded, transcribed and analysed using content analysis. This document reports on the general findings from our analysis of the data collected.

The project team produced a conceptual model of research utilization which was presented to the international expert panel for discussion. Following this discussion, the expert panel produced: (1) a series of definitions of research utilization that guided subsequent focus groups with the direct and non-direct nursing care providers, (2) a revised diagram conceptualizing research utilization, and (3) a list of indicators of research utilization. These definitions and the diagram were brought forward to subsequent focus groups with the various groups of nursing service personnel where they were used in an iterative process as mechanisms to initiate discussion and solicit feedback. We made substantial progress toward clarifying and validating the general construct of research utilization and the more narrow concept of instrumental research utilization. As well we identified several observable indicators of research utilization in general and of instrumental research utilization in particular.

Although further work remains, this study adds validity to previous work in the field and lays a foundation for the development of an instrument to measure research use.

2.0 STUDY METHOD

2.1 Ethical Approval

The study received ethical approval from the University of Alberta/Capital Health Authority and the University of Calgary Health Research Ethics Boards. The Alberta Health Regions of East Central, Aspen, David Thompson, Peace Country, Palliser and Northern Lights approved the conduct of this study in their jurisdictions.

2.2 Study Design

A qualitative approach using focus group interviews with several different "expert" groups was used. Focus groups are efficient, cost effective and generate large amounts of rich data. The focus groups provided the researchers the opportunity to observe small group responses to questions posed by a facilitator and to observe the level of agreement on particular topics. The expert groups included (a) local experts (i.e., the project team members), (b) international nursing experts in the research utilization field (c) non-direct care nursing service providers (i.e., managers, educators, nurse specialists) and (d) direct care nursing service providers (i.e., registered nurses, registered psychiatric nurses, licensed practical nurses, nurse aides). The study, conducted in three phases, was iterative with findings at each step informing subsequent data collection steps.

2.3 Sampling and Data Collection Procedure

In **Phase 1** of the study, local experts (the five researchers leading the study) met to undertake initial construct development and develop a model of research use. This initial construct development was the starting point for Phase 2 of the study.

For **Phase 2** a group of nine international nursing experts in the research utilization field met for a day and a half face-to- face with investigators from the project team (local experts) in Edmonton in May of 2005. They engaged in construct clarification and development of indicators of research utilization. The expert panel consisted of the following individuals:

Table 1. Expert panel composition

	Attendees
Expert Panel Edmonton May 25-26, 2005	**Dr. Carole Estabrooks (chair), University of Alberta, Canada**
	Dr. Donna Ciliska, McMaster University, Hamilton, Canada
	Dr. Nancy Edwards, Mc Master University, Hamilton, Canada
	Dr Jo Logan, University of Ottawa, Ottawa, Canada
	Dr. Judith Ritchie, McGill University, Montreal, Canada
	Dr. Jo Rycroft-Malone, Royal College of Nursing, Oxford, UK
	Dr. Anne Sales, University of Washington, Seattle, USA
	Dr. Carl Thompson, University of York, UK
	Dr Marita Titler, University of Iowa, USA

The outcome of the expert panel was a series of definitions of research utilization and its types (conceptual and instrumental research utilization) and a diagram conceptualizing the structure of research utilization and expanding on these definitions. The definitions of conceptual and instrumental research utilization as well as the diagram illustrating these concepts were used in the focus groups with the non-direct and direct care nursing service providers in Phase 3 of the study.

For **Phase 3** focus groups with the non-direct and direct care nursing service providers were conducted. The recruitment of participants for this phase was conducted by the project coordinator. Initially, a primary contact in each health region was identified. With the assistance of this individual, posters containing specific information about the focus groups (e.g., date, time and location) and contact information for the project coordinator were posted at the proposed sites several weeks in advance. Highlighted, as well on the poster was the fact that an honorarium of $45 would be paid to each participant as a token of appreciation for their time and expenses (e.g., parking).

Individuals interested in participating in the focus groups contacted the project coordinator to have their name, contact information and job description added to a participant list. Using the information gathered, all participants were categorized into direct care (registered nurse/registered psychiatric nurse or licensed practical nurse/nurse aide) and non-direct care (managers/ educators/nurse specialists) nursing service providers. The project coordinator attempted to allocate a minimum of 6-8 participants to each focus group.

When a sufficient number of participants had been accumulated, more detailed planning took place. Follow-up telephone calls were made to participants with more precise information on the time and location of the focus groups. The project coordinator purchased refreshments (e.g., pizza, drinks, cookies) which were served during the focus groups to help contribute to a relaxed atmosphere.

Focus groups lasted for 90 minutes, during which time one of the investigators facilitated the discussion, which was either tape recorded or recorded verbatim in "real time" by a court reporter. In addition to the record of the discussion, a second person (project coordinator or graduate student) wrote qualitative notes on attitudes and interactions by participants to be used in the data analysis.

There were two rounds of focus groups with the care providers. Round 1 focus groups were aimed at clarifying the construct of research utilization and identifying observable indicators of research utilization, which would later be utilized to develop a measurement instrument. A total of nine focus groups were conducted in this round: four focus groups with non direct care nursing service providers (managers, educators and nurse specialists) and five focus groups with direct care nursing service providers (consisting of two focus groups with registered nurses/registered psychiatric nurses and three focus groups with licensed practical nurses/nurse aides). Following the first round of focus groups in the summer and fall of 2005, data analysis was performed and this was followed by confirmatory focus groups in the winter of 2007 (Round 2).

A total of three focus groups were conducted in Round 2: one focus group with non-direct care nursing service providers and two focus groups with direct care nursing service providers (one

focus group with registered nurses/registered psychiatric nurses and one focus group with licensed practical nurses/nurse aides).

Table 2 displays the composition and location of the direct care and non-direct care nursing service provider focus groups.

Table 2. Focus group composition and location

Group Allocation	Date	Professional Group	Location	Number of Attendees
ROUND 1 (Exploratory Focus Groups)				
Non-Direct Care Nursing Providers	June 08, 2005	Managers Nurse practitioners	Calgary (Urban)	5
	June 22, 2005	Managers, Directors	Grande Prairie (Rural)	4
	June 23, 2005	Professional practice leader, Educator, managers	Edmonton (Urban)	7
	June 28, 2005	Clinical Nurse educator, Clinical Nurse specialist Nurse practitioner	Edmonton (Urban)	6
Direct Care Nursing Service Providers	August 11, 2005	Registered nurses	Edmonton (Urban)	10
	August 18, 2005	Licensed practical nurses, nursing assistants	Edmonton (Urban)	10
	September 21, 2005	Registered Nurses	Calgary (Urban)	10
	September 22, 2005	Licensed practical nurses, nursing assistants	Calgary (Urban)	5
	December 12, 2005	Licensed practical nurses, nursing assistants	Edmonton (Urban)	6
ROUND 2 (Confirmatory Focus Groups)				
Direct Care Nursing Service Providers	January 9, 2007	Licensed practical nurses	Edmonton (Urban)	4
Non-Direct Care Nursing Providers	January 10, 2007	Managers	Edmonton (Urban)	5
Direct Care Nursing Providers	January 11, 2007	Registered nurses	Edmonton (Urban)	7

2.4 Data Analysis Procedures

Notes and recordings of the discussion between the local experts (local expert focus group) and the international expert panel (international expert panel focus group), as well as the direct and non-direct care nursing service provider focus groups were transcribed professionally or recorded verbatim (in the case of some of the nursing care provider focus groups). All transcripts were then managed either as Microsoft Word or portable document format (pdf.) files. The local expert and international expert panel focus groups files were used as reference material by the study team. The direct and non-direct nursing care provider transcripts were analysed using content analysis. Each transcript was independently coded and analysed by two members of the research team in addition to further analysis by a doctoral student. Any coding discrepancies were settled through consensus in full team meetings. Using the interview questions as an overall structure, text units reflecting different aspects of research utilization were selected. The text units were coded close to the original statements and the codes were then merged into five categories: (1) international expert panel research utilization conceptual diagram, (2) definitions of research utilization (3) terminology used for research utilization, (4) examples of research utilization , and (5) indicators of research utilization. The analysis was a continuous iterative process, with earlier data re-examined as team members deliberated over coding.

3.0 RESULTS

3.1 International (Expert) Panel Focus Group

A group of nine international nursing scholars in the research utilization field met face-to-face with investigators from the local research team for two days to engage in discussions around the construct of research utilization. These discussions were part of an iterative process in which the findings at each step served to inform subsequent data collection steps. At the end of this two-day focus group session, the international expert panel produced: (1) a series of definitions to provide construct clarity on what research utilization is and to provide guidance for upcoming focus groups with the direct and non-direct nursing care providers, (2) a diagram conceptualizing research utilization and illuminating these definitions, and (3) a list of indicators of research utilization.

The international expert panel began their two-day discussion by examining a conceptual diagram developed by the local investigative team (see Figure 1). This diagram illustrated the construct of research utilization as consisting of two types of research utilization: (1) instrumental research utilization, and (2) conceptual research utilization. The diagram further postulates that there is a thinking component to research utilization (depicted by conceptual use to the left of the diagram) as well as an action component (depicted by instrumental use to the right of the diagram). A temporal relationship between the two types of research utilization is hypothesized to exist which is reflected by the green lines which divide the right (conceptual use) and left (instrumental use) sides in the diagram. The diagram also depicts the notion of *research nonuse* which can be informed or uninformed. Informed nonuse refers to the deliberate choice **not** to use the findings of scientific research for a defensible or non-defensible reason. Defensible reasons for non-use may be related to absence/lack of resources (human and/or technical), lack of environmental support, contextual patient characteristics, or organizational policy that contradicts its use. Non-defensible reasons may be related to factors associated with unit/organizational culture, practice norms, and intrapersonal characteristics. Uninformed nonuse, on the other hand, refers to nonuse of the findings of scientific research due to lack of awareness.

Figure 1. Investigative team research utilization conceptual diagram
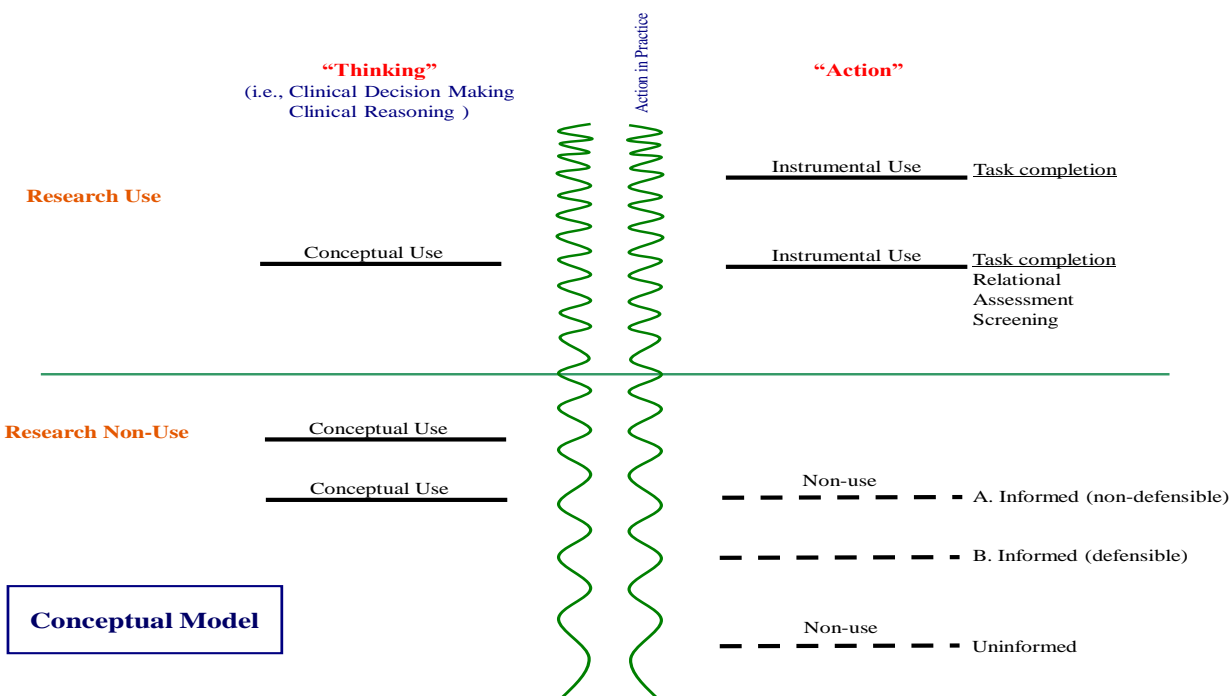
Following in-depth discussion of investigative team research utilization conceptual diagram (figure 1), definitions of research utilization and a revised conceptual diagram of research utilization were produced by expert panel members.

3.1.1 Definitions of Research Utilization

Consensus was reached among members of the international expert panel on definitions for *research utilization, instrumental research utilization*, and *conceptual research utilization.* These definitions are presented in Table 3. The final agreed upon definition for *research utilization* was "the application of research-based knowledge to improve outcomes". The process used to reach this definition involved a detailed examination by the panel of the terms *research* and *utilization* separately. This examination included discussion on what each term meant from both theoretical and operational standpoints.

In the research utilization literature, *symbolic research utilization*, has also been identified by some scholars as a type of research utilization. There was discussion among the expert panel participants as to whether symbolic research utilization was truly an unique type of research utilization or was it a form of instrumental or conceptual research utilization. Members of the panel generally agreed that symbolic research utilization was likely a subset of conceptual research utilization whereby research is used instrumentally to change practice but is done so by influencing the action of others (e.g., decision-makers). Therefore, symbolic research utilization was neither defined by the panel

nor presented to the nursing service provider focus groups as a unique concept from instrumental or conceptual research utilization.

Table 3. International panel definitions

Term	Definition
Research	An activity whose purpose is to find a valid answer to some question that has been raised. The answers provide new knowledge to the world at large. It is a purposeful activity (Abdellah and Levine, 1986). Four criteria provide the basis for a working definition of research: 1. Research is a form of systematic inquiry; 2. Research should be rigorous; 3. Research should be critical and reflective; 4. Research should generate communicable knowledge 　　　　　　　　　(University of Wolverhampton)
Research Utilization	Application of research-based knowledge to improve outcomes.
Instrumental Research Utilization	Application of research-based knowledge that results in observable action (the user may or may not be aware that the action is research-based).
Conceptual Research Utilization	Consideration and application of research-based knowledge to one's thinking (some aspects may be observable).

3.1.2   Research Utilization Conceptual Diagram

Following reaching consensus on the definitions for research utilization, instrumental research utilization, and conceptual research utilization, a diagram (revised from the local expert diagram) visually depicting research utilization was constructed (see Figure 2).

Figure 2. International expert panel research utilization conceptual diagram
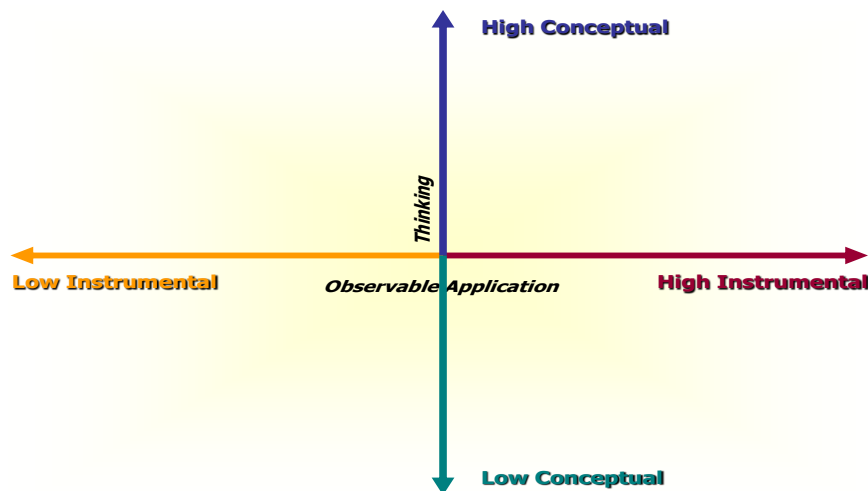
In this diagram, conceptual research utilization and instrumental research utilization are two separate concepts. Conceptual research utilization is represented by the Y (or vertical) axis in the diagram while instrumental research utilization is represented by the X (or horizontal) axis in the diagram. In this conceptualization, instrumental research utilization and conceptual research utilization exist on a continuum from low to high, and can be represented as being orthogonal, that is they may exist independent of each other.

The diagram shows four quadrants into which an individual's (or group/unit's) scores can fall with respect to research utilization. Patient care units can also be mapped to this grid by aggregating the scores of the individual nurses within the unit.

- Quadrant 1 (high instrumental use, high conceptual use)
- Quadrant 2 (low instrumental use, high conceptual use)
- Quadrant 3 (low instrumental use, low conceptual use)
- Quadrant 4 (high instrumental use, low conceptual use).

Quadrant 1 (high instrumental use, high conceptual use) the panel argued is the most desirable quadrant and equated it with informed use of research, deliberate use that results in action. Individuals and/or patient care units falling within *Quadrant 2* (low instrumental use, high conceptual use) are hypothesized to be high with respect to thinking (high conceptual) about research findings but low with respect to acting (low instrumental) on those research findings. In essence, they can be thought of as using research to inform their thinking but are not translating that research into observable action. *Quadrant 3* (low instrumental use, low conceptual use) was argued as the least favourable by members of the expert panel as it is equated with nonuse of research. This nonuse could be informed or uninformed. As previously stated, informed nonuse refers to the deliberate choice **not** to use the findings of scientific research while uninformed nonuse refers to nonuse of the findings of scientific research due to lack of awareness. This distinction between informed and uninformed is important to the development of intervention to increase research use. Finally, *Quadrant 4* (high instrumental use, low conceptual use) reflects

individuals and/or patient care units who are low on thinking about research findings (low conceptual) but high on acting on research findings (high instrumental). This final quadrant could reflect nurses/units where policy, procedure or guideline adherence is high.

3.1.3 Indicators of Research Utilization

The international expert panel members also generated a short list of possible indicators of both instrumental research utilization and conceptual research utilization. A selection of these indicators, summarized in Tables 4 and 5, were used in the focus group discussions held with the direct and non-direct care nursing service providers.

Table 4. International panel indicators of instrumental research utilization

Guideline implementation
Use of research based appropriate assessment tools
Use of appropriate research-based interventions – many types
Using evidence to persuade others to take an action that is research based
Using evidence to develop a program
(or other thing e.g. educational material, policy, procedure, routines)

Table 5. International panel indicators of conceptual research utilization

Making sense of evidence
Valuing research based practice
Questioning of current practices - challenging
Revising ideas, opinions
Receptiveness to new information
Sustained engagement with relevant research based sources
Seeking answers
Thinking about what to do
Articulating what to do
Prioritizing
Seeking feedback on performance

3.2 Nurse Provider Focus Groups (Round 1)

Findings from the focus groups held with non-direct care nursing service providers (i.e., managers, educators, nurse specialists) and the direct care nursing service providers (i.e., registered nurses, registered psychiatric nurses, licensed practical nurses, nurse aides) elicited findings related to five core categories:

1. The international expert panel research utilization conceptual diagram
2. Definitions of research utilization

3. Terminology used for research utilization
4. Examples of research utilization
5. Indicators of research utilization

3.2.1 Research Utilization Conceptual Diagram

The research utilization conceptual diagram constructed by the international panel of experts (Figure 2) was shown to all nursing care provider focus group participants. All three groups of participants (managers/educators/nurse specialists, registered nurses/registered psychiatric nurses, and licensed practical nurses/nurse aides) provided comments on the conceptual diagram; however, the majority of comments came from the managers/educators/nurse specialists group.

Remarks made by the registered nurses/registered psychiatric nurses, and licensed practical nurses/nurse aides were primarily confirmatory and positive in nature. For example, one licensed practical nurse noted the following:

> "I think it pretty much makes sense to me, because some people are, they think about things more but they really don't know how to implement, or know how to get past the point of, like, it sounds good but whether they actually go ahead and you know. Or some people just say "well, tell me what you want me to do. It sounds good to me." But not really stop to think about why, and working it through. So to me this pretty much makes sense because you can have varying degrees of each."

A registered nurse noted the following:
> I think it would be helpful if people could actually see a graph like this, though, instead of saying, you know, we need to be more instrumental or be more conceptual because people probably won't to understand what that means, but being able to see it, I think, would help."

Statements made by the manager/educator/nurse specialist groups were more varied in nature: some positive and confirmatory, some negative, and others related to suggestions as to how to change/revise the diagram. Examples of statements made illustrating positive and confirmatory feedback on the diagram include the following:

> "I can understand how this could be applied to a number of things and it gives you plots and a graph and it gives you, you know, all the wonderful things that you can polish in a study"

> "This diagram is very useful. That to me put it – I'm visual and so right away I went, I know what they're talking about with that. And that was good"

Others in the manager/educator/nurse specialist group offered insight and suggestions for improving the diagram. Nurses in this group described the construct of research utilization as something "*dynamic*", "*growing*", and "*moving*" which they believed was not effectively captured in the conceptual diagram presented. The diagram, according to this group, was "*rigid and static*". It was suggested that the individual (or group) using research in their practice moves back and forth between assessing, intervening, and evaluating a client-centered issue and that this fluidity

was lacking in the diagram presented. Additional suggestions for improving the diagram were also offered. For example, one individual suggested having a "*conceptual cloud*" that would support an individual's "*instrumental cloud*". A double helix in which the individuals begin at low conceptual and then move back and forth was also proposed. A pyramid was suggested as another approach within which conceptual use would be at the base and instrumental use towards the top. Notably however, these suggestions did not account for the movement between low and high measures of conceptual use and instrumental use that the international expert panel believed to be central to understanding research utilization patterns of individuals and groups/teams.

3.2.2   Definitions of Research Utilization

Questions asked to elicit definitions of research utilization and its various forms included the following:

1. What is research utilization?
2. What comes to mind when you hear the phrase 'research utilization'?
3. How do you perceive/understand research utilization?
4. How would you describe research utilization?
5. Are their different forms of research utilization?

3.2.2.1 Definitions of Research Utilization

There was considerable awareness among participants about the importance of using evidence or research in practice as well as questioning others about the evidence-base of one's practice. All three groups talked about research utilization in an active manner, referring to it as putting something into practice. All groups also indicated that research utilization does not just happen; rather it is "*a personal judgment*" or "*a choice*" made by the nurse. The managers/educators/ nurse specialists and registered nurses/registered psychiatric nurses described research as something employed in practice that is "*new*", "*formal*", "*knowledge*", "*evidence-based information*", "*use of principles*" and/or "*methodology to guide problem-solving*". The registered nurses/registered psychiatric nurses further associated research with best practice and quality care; this theme was not echoed in the manager/educator/ nurse specialist or licensed practical nurse/nurse aide groups. .

3.2.2.2 Definitions of Instrumental Research Utilization

There was great similarity across groups in how instrumental research utilization was defined. All groups believed that *instrumental research utilization* resulted in observable action. For example, as stated by a registered nurse "*Instrumental, I see as observable ,it is what they're doing*". All groups also believed that to be an instrumental user of research did not necessitate needing to be aware that the action is research-based. One individual from the manager/educator/nurse specialist group went a step further to suggest the possibility that two types of instrumental research utilization, passive and active, may exist. She defined passive instrumental research utilization as following a procedure based on research, whereas active instrumental research utilization, she

argued, led to seeking understanding about why one was instructed to do something in a particular way.

3.2.2.3 Definitions of Conceptual Research Utilization

All three groups found it difficult to discuss conceptual research utilization until the international expert panel definition was provided to them. Only then were they able to define what conceptual research utilization meant to them. Generally speaking, regardless of group membership, conceptual research utilization was defined as thinking and providing rationale for one's actions. Additionally, members of the manager/educator/nurse specialist groups also defined conceptual research utilization as "*how [not what] we teach our patients*", "*what we believe is true*", "*evaluating research findings*" and the "*artistic side of nursing*". The licensed practical nurse/nurse aide participants described conceptual research utilization as "*thinking*", "*common sense*", "*changing [one's] attitude on the "right" approach*", and "*making a decision about what is appropriate*" while the registered nurse/registered psychiatric nurse participants consistently defined it as "*thinking*", "*critical thinking*" and/or being able to explain "*why*" you are doing something.

3.2.2.4 Differences of Opinion Regarding Instrumental and Conceptual Use

There was some division among members of the manager/educator/nurse specialist groups with respect to whether or not conceptual research utilization is required before instrumental research utilization can occur, and where the division between conceptual and instrumental research utilization ultimately lies. For example, a manager in one focus group commented that if the application of research-based knowledge to one's thinking changes the way one approaches somebody (conceptual research utilization by definition), it could be thought of as instrumental research utilization. There was also conflict in another of the manager/educator/nurse specialist groups about whether or not having to think about a piece of research based knowledge because it is so ingrained and internalized falls under conceptual or instrumental research utilization. In other words, when using a piece of research becomes a ritual part of your work is it conceptual or instrumental research use, participants were unsure.

3.2.3   Terminology used for Research Utilization

Focus group participants were asked to discuss common terminology they use to refer to the construct of research utilization. The terminology used by all three groups were similar and were typically examples of *instrumental research utilization* in management decision-making and clinical practice. The term *research utilization* was not commonly used by either group. Instead, a variety of other terms such as "*evidence-based practice (medicine)*", "*research-based knowledge*", "*based on research*", "*best evidence*", "*best practice*", and "*based on evidence*" were commonly used to refer to the construct of research utilization across all three groups.

 Each group also noted select key phrases for the construct of research utilization unique to their group. For example, the managers/educators/nurse specialists often utilize the following phrases:

"*according to research this is what was said*", "*according to research this is what was done*", and "*based on the resident/information*". The registered nurses/registered psychiatric nurses often use the term "*improve*" in reference to the use of research in clinical practice. The licensed practical nurses/nurse aides use phrases such as "*based on the study*" and "*based on evidence"* in addition to the common phrases identified above.

3.2.4   Examples of Research Utilization

Focus group participants were also asked to discuss their research utilization experiences, and to provide examples of research utilization. Most of the examples provided related to research utilization in general and/or instrumental research utilization specifically; few of the examples suggested indicated conceptual research utilization. All groups identified *following protocols* and *discussing research-based practices* as examples of research utilization. However, the most common elicited examples related to specific patient conditions (e.g., caring for a patient with a pressure ulcer) and/or nursing practices (e.g., cord care for newborns, flushing intermittent peripheral intravenous devices with normal saline instead of a heparin solution).

The examples offered became increasingly concrete (and more condition-specific) as one moved from the managers/educators/nurse specialists to the registered nurses/registered psychiatric nurses to the licensed practical nurses/nurse aides. The managers/educators/nurse specialists provided 16 exemplars of research utilization, of which only 4 (or 25%) related to specific conditions (e.g., neonatal cord care, congestive heart failure care plans, choosing Heparin injection sites, and medications for specific conditions such as giving cardiology patients the drug – Metropenol). With the direct care nursing service provider groups, larger proportions of the examples provided related to specific conditions. For instance, within the registered nurse/registered psychiatric nurse groups 13 of the 24 (or 54%) of the examples provided related to specific practices and in the licensed practical nurse/nurse aide groups, 14 of the 21 (or 67%) examples provided related to specific practices. Examples related to specific practices from the registered nurse/registered psychiatric nurse groups included "*unplugging central venous lines*", using the "*Regina risk indicator*" scale, using the "*Braden scale"*, "*flushing nasogastric tubes"*, and using "*filtered needles"*. Examples from the licensed practical nurse/nurse aide groups included "*use of new incontinence care products*", "*bathing protocols"*, "*restraint use*", "*repositioning patients*", using the "*Braden scale*", and following a "*delirium protocol*".

3.2.5   Indicators of Research Utilization

In addition to clarifying and validating the construct of research utilization with nurses, indicators of its use were also elicited. To start a discussion on what the indicators of research utilization may be, we asked the focus group participants the following questions:

1. What does it look like when research is used?
2. How can you see if research is used in practice by a nurse?
3. How do you know when research is used in practice by a nurse?
4. What do you consider to be observable indicators for research utilization?

Several indicators of research utilization (relating to research utilization in general and instrumental research utilization specifically) were generated by the focus group participants. While some indicators were group-specific (that is, applying only to either the managers/educators/ nurse specialists or registered nurses/registered psychiatric nurses or licensed practical nurses/nurse aides), several indicators were common across all three groups. For example, *following research-based protocols, reading research literature, using systematic assessment instruments,* and *peer-to-peer interactions* were examples of indicators of research utilization identified by all groups. Examples of indicators identified only by specific groups included: seeking evidence (managers/educators/nurse specialists), reads/contributes/uses information in the communication book (registered nurses/registered psychiatric nurses), and presence of evidence-based information on the units (licensed practical nurses/nurse aides). A selection of the most common indicators identified are displayed in Tables 6 (for general research utilization) and 7 (for instrumental research utilization) by nursing group.

Following analysis of the indicators listed in Tables 6 and 7, several approaches for measuring these indicators were proposed. These approaches were proposed by the focus group participants and include:
1. self-report (survey and/or interview)
2. observation
3. document analysis (e.g., chart audit)

Table 6. Summary of selected indicators of general research utilization

Indicator	Managers/ Educators/ Nurse Specialists	Registered Nurses/ Registered Psychiatric Nurses	Licensed Practical Nurses/ Nurse Aides
Nurses asking questions	√	√	√
Peer-to-peer interactions	√	√	√
To provide reasons for ones action	√	√	
Reading of research literature	√	√	√
Bringing in research articles to work	√	√	√
Seeking evidence	√		
Critical thinking	√		
Attending conferences/in-services, workshops		√	√
Reads/contributes/uses unit journal		√	
Evidence-based information* on unit			√
Adherence to care standards		√	
Using the Internet			√
Ongoing Research in facility	√	√	√

* = Evidence-based information examples include posters, brochures, notices, etc.

Table 7. Summary of selected indicators of instrumental research utilization

Indicator	Managers/ Educators/ Nurse Specialists	Registered Nurses/ Registered Psychiatric Nurses	Licensed Practical Nurses/ Nurse Aides
Following research-based policies/protocols	√	√	√
Using systematic assessment instruments	√	√	√
Developing/updating policies/procedures	√		
Changing practice (based on research)		√	
Implementation of new products or technologies/ specific research-based practices	√	√	√

3.3 Nurse Provider Focus Groups (Round 2)

A second round of focus groups (one session each with of managers/educators/nurse specialists, registered nurses/registered psychiatric nurses, and licensed practical nurses/nurse aides) was conducted to validate the approaches identified for assessing research utilization in general and instrumental research utilization specifically in the Round 1 focus groups. Validation was achieved with all three groups. No new information on the construct of research utilization in this second round of focus groups was sought or obtained.

4.0 SUMMARY

This Technical Report is the first written summary of our work, based on the preliminary analysis of the data collected in the course of the *Developing a Valid and Reliable Measure of Research Utilization* study. Its main purposes are (1) to serve as a frame of reference guiding any subsequent in-depth analysis of these data and (2) to create an initial dissemination vehicle for the study. For this reason, the report is descriptive and aims at outlining key themes emerging from the findings.

We set out in this study to: (1) clarify and validate the construct of research utilization, (2) develop observable indicators of research utilization, and (3) develop a set if items that measure research utilization. We were able to make substantial progress in clarifying and validating the construct of research utilization in general and the more specific concept of instrumental research utilization. We also identified several observable indicators of research utilization both for research utilization in general and also for instrumental research utilization specifically. However, several issues in need of understanding before new robust measures of research utilization can be developed remain unresolved: (1) what is the relationship between the concept of general concept of research utilization and that of instrumental research utilization and conceptual research utilization, and (2) what is the nature and possible relationship of the concept of symbolic research utilization to the concepts of general/overall, instrumental, and conceptual research utilization. In addition to these unresolved issues, further research is also needed to more fully understand the concept of conceptual research utilization before indicators and items with which to measure it can be developed.

The engagement of several international scholars in the research utilization field was a key component of this study and resulted in several important insights that advanced our understanding of the construct of research utilization. Through this engagement process we were able to develop and reach consensus on definitions for research utilization and its two main types (instrumental and conceptual) as well as develop a preliminary list of indicators for instrumental research utilization and conceptual research utilization. Most importantly, however, we were able to develop a preliminary conceptual diagram visually depicting the construct of research utilization from which we can build on in the future as our understanding of research utilization broadens. This diagram may have potential diagnostic utility (at the level of the individual patient care unit) if and when robust measures of instrumental research utilization and conceptual research utilization are established.

Analysis of the non-direct care nursing service provider (managers/educators/nurse specialists) and direct care nursing service provider (registered nurses/registered psychiatric nurses, and licensed practical nurses/nurse aides) focus group data allowed us to engage further in construct clarity. Several key findings emerged from these data. These include:

- There is considerable awareness among nurses about the importance of using evidence or research in practice.

- The term 'research utilization' is not commonly used by nurses. Instead, a variety of other terms are commonly used to refer to the construct of research utilization (e.g., evidence-based practice (medicine), research-based knowledge, best evidence).

- Research utilization is viewed as something that is dynamic, growing, and moving; it is not a static phenomenon.

- There are two generally accepted forms of research utilization: instrumental and conceptual. Instrumental research utilization is equated with observable action while conceptual research utilization is equated with thinking. However, confusion remains with respect to exactly *what* conceptual research utilization is and where the division lies between conceptual research utilization and instrumental research utilization.

- Research utilization is viewed more abstractly by higher levels of nurse providers (as evidenced by the provision of less concrete examples of research utilization by managers/educators/nurse specialists compared to registered nurses and licensed practical nurses/nurse aides). This will affect the development of a measure of research utilization and may necessitate the need for separate measures for different groups of nurses.

- General research utilization and instrumental research utilization can and possibly should be measured concurrently using a variety of techniques including self-report (survey and/or interview), observation, and/or document analysis.

5.0 IMPLICATIONS AND FUTURE DIRECTIONS

Developing a robust measure of research utilization for use among nurses is important in order (1) to undertake comparisons among groups, settings and/or institutions, (2) to conduct sound research utilization intervention studies, and to (3) accurately assess the impact of research use on outcomes (i.e., to assess the dose response effect). Having a robust tool will enable both researchers and decision-makers to have greater confidence in the results of research. This study was a first step in our efforts to develop a new measure of research utilization.

Next steps include:

(1) Assessment of the formal structure of research utilization within nursing.

(2) A systematic review of the psychometric properties of existing measures of research utilization for healthcare providers and healthcare organizations.

(3) Concept clarification of conceptual research utilization in the form of a traditional Wilsonian concept analysis.

(4) Development and feasibility testing of a suite of instruments to measure research utilization (and its various subtypes) within nursing.

(5) Validation of the new suite of research utilization instruments in acute and long-term care settings.