

The Effect of Staff Nurse Participation in a Clinical Nursing Research Project on Attitude Towards, Access to, Support of and Use of Research in the Acute Care Setting

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Abstract

The purpose of this study was to determine the effect of participation in research on staff nurses' attitude towards, access to, perceived support of and reported use of research in practice.

Six medical surgical units in a southeastern Ontario teaching hospital were randomly assigned to receive 3 different levels of exposure to research: high, low and usual. On the high participation units, a clinical research group consisting of the investigator and interested nurses (n = 18) critiqued research literature related to an important clinical issue (i.e., patterns of sleep) and designed and implemented a clinical research study. On the low participation units, a similar clinical research group (n = 10) met once and were involved, solely, in the design and implementation of the clinical research protocol. On the control units, there were no formalized research groups or activities. All registered nurses (n = 235), including the research group participants, on the 6 units were surveyed with a research utilization questionnaire (RUQ) pre and post participant intervention.

The RUQ scores were higher on the high participation units at baseline and post intervention in comparison to the low and control units. Nurses who participated directly in the clinical research groups (high and low) reported similar RUQ scores post intervention and higher scores in comparison to all nurses. All RUQ scores were higher post intervention.

Nurses with clinical expertise but minimal research expertise participated meaningfully in clinical research. While participation had an individual effect there was no unit effect, suggesting other factors, such as organizational support and culture, are important determinants of research use.

Research and decision making is a process; the clearest message from evaluations of successful research utilization is that early and ongoing involvement of relevant decision makers in the conceptualization and conduct of study is the best predictor of utilization (Lomas, 1997, p. 8)

Changes in the Canadian health care system in the past decade have influenced the working environment for nurses, most notably in the acute care setting (Canadian Nurses Association, 1999). Nurses are concerned about their ability to maintain and enhance clinical knowledge and competencies, especially in the current environment of rapid change, escalating demands associated with complex critically ill patients and minimal (if any) protected time for professional development activities. These concerns are particularly worrisome as nurses are expected (and desire) to provide quality care that is reflective and evidence based (College of Nurses, 1999). Nursing departments are challenged to create working environments that provide opportunities for nurses to participate in activities that promote and facilitate critical and scholarly examination of practice and practice knowledge.

The purpose of this research was to determine the effectiveness of research participation on nurses' attitude towards, access to, perceived support of, and use of research. We hypothesized that nurses who were involved, directly or indirectly, in a clinical nursing research project would report a more positive attitude towards, access to, perceive support of and use of research in practice decisions in comparison to nurses who were involved minimally or not at all in formalized research activities.

Background

Nursing departments in Canadian hospitals have responded, as best they can within the context of economic restraint, to create attractive (and effective) work environments, supportive of professional, evidenced-based nursing care. New processes (e.g., clinical care pathways, evidence based policies and procedures) and new roles (e.g., advanced nurse practitioners) are supportive of the development of evidence based practice. However, staff nurse involvement in or exposure to scholarly activities is limited and, normally, passive in nature. Staff nurses attend unit based inservice, rounds and conferences and participate in hospital practice committees. These activities, while valuable, do not systematically engage the nurse in active and critical examination of practice. Staff nurses may have limited skill in this regard as historically, diploma nursing education focused on clinical knowledge and skill with no or limited attention to the development of knowledge and skill in research methods or research utilization. Few Canadian teaching hospitals have formalized nursing

research programs (i.e., programs that actively promote and direct research or scholarship activities), despite the tripartite mission of these hospitals for practice, education and research. Thurston, Tenhove, Church and Weisberg (1993) surveyed Canadian teaching hospitals in 1986 and 1991. Interest in nursing research increased but actual nursing research had decreased over the five years by 11%, with 27% of hospitals reporting no nursing research in 1991. Strategies to enhance research based practice have had limited success in changing nursing behaviour and knowledge (Hodnett, 1996). This may be related to our poor understanding of: (a) the concept of research utilization (Estabrooks, 1999a); (b) the impact of individual determinants (i.e., attitude towards research use, educational preparation, scholarly reading behaviour, involvement in research activities) and organizational determinants (i.e., access to research and time, presence of a research champion, quality improvement processes, research culture); and (c) the impact of innovation attributes (i.e. complexity, compatibility, perceived benefit, and trialability) to the process (Estabrooks, 1998; Hatcher & Tranmer, 1997).

Nursing is a practice-based profession; thus practice knowledge is important. Estabrooks (1999b) surveyed 1500 nurses in western Canada. Respondents (n= 600, 40%) reported that practice knowledge, that is knowledge gained through their personal work experience was the most frequent source of knowledge. Tranmer, Squires, Brazil, Gerlach, Swan, Johnston et al (1998) reported similar findings in a national Canadian survey of evidence based decision making. Approximately 80% of the key informant sample (n=114) indicated that knowledge gained from experience was more important than other forms of evidence with respect to decision making. This is not surprising since we have not provided opportunities for nurses to participate in and understand the research process and creation of knowledge. In this context, experiential knowledge would be each nurse's most current and probably most clinically reliable source of knowledge.

Nurses obtain practice knowledge from working with their peers and with their colleagues in medicine and other health professions. It is within this context of nursing practice that programs to critically review knowledge and generate new knowledge should be based. In the past five years, this organization, through the auspices of its Nursing Research Program (and other initiatives), has developed a multi-faceted program with two major objectives: (1) To increase staff nurses' awareness of and use of the best available evidence for nursing practice decisions, and (2) To contribute to nursing practice knowledge through the conduct of scholarly, scientific research studies (Tranmer, Coulson, Holtom, Lively and Maloney, 1998). We have had some success; nursing research activity (e.g., research projects, scholarly

presentations and publications) has increased, but, we remain challenged in our efforts to create effective organizational processes and structures to support staff nurses' involvement in research activities. In a previous research utilization intervention study in our Neonatal Intensive Care Unit (NICU), we evaluated the effectiveness of participation in research on nurses' satisfaction with their work (Tranmer, Kisilevsky & Muir, 1995). We found that staff nurses with no formal education in research developed critical reading and review skills (at a beginning level) and contributed meaningfully to the development of nursing knowledge through involvement in a clinical research project, that was important and relevant to them. The research project served as a "vehicle" for the acquisition of new skills and knowledge. Work satisfaction for all nursing staff in the NICU significantly increased post intervention, specifically in the areas of interpersonal collaborative relationships. The findings from this project, while encouraging, were somewhat limited in that we did not measure the effectiveness of the intervention on attitude towards or use of research in practice nor did we control for the effect of other processes that may have effected nurse satisfaction. Therefore, we wished to address these limitations in this research study and build upon the participant intervention used.

The research questions were:

- 1) Does direct participation by staff nurses in a clinical nursing research project increase staff nurses' attitude towards, access to, support of and use of research in comparison to nurses who do not participate or participate minimally?
- 2) What is the indirect unit effect of different levels of staff nurse participation on staff nurses' attitude towards, access to, support of and use of research in comparisons to nursing units who do not participate or participate minimally?

Methodology

This pretest, posttest, comparison group study took place on six medical surgical units at a fully accredited 424 bed university affiliated acute care hospital in southeastern Ontario. All medical surgical units (n= 6) were invited and agreed to participate. Each unit was randomly allocated, via blind selection to 3 categories of high level of participation, low level of participation or control (no participation). We selected medical surgical units and not specialty units, such as ICU or Emergency, as we wished to have the nurses to engage in a research project on a clinical issue that was common and relevant across all units.

Participants

There were two groups of participants. The first group of participants included nurses who volunteered to be part of the research working groups on the low and high

participation units. The principal investigator attended staff nurse meetings on the low and high participation units, explained the study and invited participation in the working group. Eighteen nurses from the two high participation units and 10 from the two low participation units agreed to participate in the working group.

The second group and level of participants were all staff nurses on the six medical surgical units, not directly involved in the research working groups. These nurses were surveyed before and after the research utilization intervention.

Research utilization intervention

The intervention was based on a participant modeling approach to knowledge and skill acquisition, a process that involves modeling, guided enactment and self-directed application of the newly acquired skills (Bandura, 1986). The clinical research working group (n= 18) from the two high participation units participated in approximately 20 hours of workshop/protected time. They learned how to review and critique research literature, completed a literature review on a group selected clinical practice issue (i.e., patterns of sleep in hospitalized patients), participated in the design of a research study to address their identified clinical problem and participated in the implementation of the research study. The clinical research group (n= 10) from the two low participation units were involved in one 8 hour workshop. At this workshop, the background literature related to the specific clinical issue was presented and the group discussed how to best implement the research study on their particular units.

Both the high and low participation units engaged in the implementation of the clinical research protocol that evaluated sleep patterns in medical and surgical patients. A brief abstract of the clinical research study designed by the nurses is outlined in Table 1. All nurses on the high and low participation units were responsible for assisting with patient recruitment and data collection. We are in the process of analyzing the results of the clinical research study. Therefore, the formal sharing and interpretation of the clinical findings is an outstanding component of the intervention as is the dissemination of the research findings with the staff nurses on the involved units. On the control units, there were no research workshops or research study.

Measures

The outcomes of interest were attitudes toward research, access to research, support of the use of research and reported use of research. These outcomes were measured with the Research Utilization Questionnaire (RUQ) developed by

Champion and Leach (1986; 1989). The RUQ consists of 42 self-descriptive statements, comprising the four subscales of support, attitude, availability and use. Statements are rated on a five point scale anchored with 1 (strongly disagree) to 5 (strongly agree). High scores reflect positive attitude, research availability, support and use of research findings. The support subscale measures the degree to which research use is encouraged by colleagues, administrators and other health care professionals. The attitude subscale measures nurses' feelings about incorporating and using research in practice. The availability or access subscale measures the nurses' access to research findings. Finally, the research use subscale measures the degree to which nurses feel they incorporate research into their practice decisions. Reported alpha reliabilities for the subscales range from coefficients of .84 to .94. In this study, the Cronbach's coefficients for the support, attitude, availability and use subscales, were 0.85, 0.94, 0.91 and 0.93, respectively. In addition demographic information such as age, years of experience and previous research exposure was collected.

Procedure

All staff nurses from the six participating units were individually mailed a RUQ to their internal hospital mailbox before the randomization of the units and the initiation of the research group meetings. One year later all staff nurses were resurveyed. While the same number of nurses was surveyed, the actual sample consisted of different nurses as some nurses had transferred or were no longer employed in the hospital. A research assistant visited each unit on a daily basis to collect questionnaires and to encourage completion. A reminder notice was not

Table 1

<p>Title: A Descriptive Comparison of Sleep Patterns and Factors that Influence Sleep Patterns in Medical and Surgical Patients</p> <p>Investigators: Clinical Nursing Research Group</p> <p>The purpose of this study was to describe and compare medical and surgical patients' perceptions of their sleep patterns and factors that influence their sleep during three consecutive nights of an acute care hospital stay.</p> <p>Methods: A descriptive, correlational, comparative longitudinal design was used. The sample consisted of 94 medical surgical patients who were invited to participate on their first day post operation (surgical) or second day of admission (medical). Patients were excluded if their anticipated length of stay was less than 3 days, they were unable to speak or read English, and if they had a history of alcoholism, sleep disorders or mental confusion. Quality of sleep was measured using the Verran/Snyder Halpern Sleep Scale (Snyder – Halpern, & Verran, 1987) and factors that influenced sleep was measured using an adapted version of the Factors Influencing Sleep Questionnaire (Simpson, Lee & Cameron, 1996). In addition patients maintained a log that documented contacts or sleep disturbances and units tracked night unit activity on a log.</p> <p>Analysis and Results: Pending</p>

sent out. The research protocol was approved by the Kingston Health Sciences Research Ethics Board. Formal consent for staff nurse participation was not obtained. Consent was implied through completion of the survey. All responses were coded to ensure confidentiality.

Analysis

An analysis of variance (for continuous variables) and Chi-square test (for categorical variables) were applied to compare the three groups at baseline. The conventional 0.05 level of significance test was adopted in the study. Pre-post changes of the outcome measures were analyzed and compared among the three groups to determine if the staff nurses on the high participation units reported higher scores. Because of the cluster randomization, the clustering effect due to variation between units was taken into account in the analysis. To find out which factors affected research attitude and use, regression analysis was performed.

Results

Ninety-two nurses (39%) returned completed questionnaires at baseline and 88 nurses (37%) completed the questionnaire a year later after data collection for the clinical project was completed for a total sample of 190 nurses. Table 2 outlines the baseline characteristics of the sample. The sample consisted, predominantly, of nurses with college level preparation, employed between 8-10 years in nursing. Nurses from the low participation unit had worked significantly longer in nursing and on their unit.

Pre-study exposure to research activities or research experience was limited. Approximately one third of the respondents had attended courses or workshops on critical reading and research skills. Surprisingly, on the low and control units, approximately 40% reported that they had been involved in a research project in the past year. We did not collect details about their research project experience, but anecdotal evidence would suggest that this was involvement in medical research conducted on the floor or as part time research assistants. We know that, at the time of the baseline survey, no nursing research projects were being conducted on the participating nursing units. Nurses reported that they read nursing journals, usually clinically based journals. There was variation in the frequency of reading reported. Medical or education journals were read less frequently. Staff nurses across the six units reported similar levels of nursing education and research experience. However, there was a significant difference in length of employment and unit experience between nurses on the low participation units and those on the high or control units.

Primary analysis: Determination of the effect of direct and indirect research participation on staff nurses' attitude

towards, perceived support of, access to and use of research

Table 4 shows the RUQ subscale and overall scores at baseline and post intervention, for nurses who participated directly in the research working group. At baseline before the randomization of the units and the formation of the working group, staff nurses from the high participation units who eventually volunteered for participation in the clinical research groups reported significantly higher scores on the attitude and use subscales. Post intervention, there were no significant differences in scores between the high and low group participants. The nurses who participated in the working groups, both low and high, reported higher RUQ scores post intervention in comparison to all nurses not directly involved in the working group.

Table 5 shows the RUQ subscale and overall score for those nurses who responded at baseline and post intervention. At baseline, the subscale scores for attitude towards and use of research was significantly higher in the nursing respondents from the two units who would eventually be designated high participation units. These higher scores persisted post intervention.

An analysis of covariance was used to determine the effect of group assignment and time on the subscale scores. This analysis included participants who completed both a pre and post questionnaire (n= 71). As before, there was a significant difference in scores for the high participation unit for attitude, use and research utilization overall. However, across group and time, these scores were not significantly different, as all scores increased and group had no effect on the difference between pre and post.

In summary, the findings showed that unit participation in research did not significantly effect individual nurses' attitude toward, access to, perceived support of and use of research. Nurses from the high participation unit had more positive attitudes and tended to use research findings more before the intervention. These high scores persisted post intervention. However, nurses who participated directly in the clinical research working groups on the low and high participation units reported higher scores after the intervention, suggesting that participating in research, even minimally, was effective. All subscale scores increased across time, regardless of group assignment. This could be related to a number of factors, which we explored further in a secondary analysis.

Secondary analysis: Predictors of research use and attitude

To determine the best predictors of research use; variables that were significantly correlated with the subscale score *research use* were entered into a stepwise regression selection procedure on nurses who responded to the first questionnaire. These variables included: attitude, access, support, involvement in research projects or courses, work

Table 2: Demographic characteristics of nurses at baseline

	High (n=37) %	Low (n=21) %	Control (n=34) %	p
Age				.08
20-29 years	7 (18%)	2 (10%)	11 (33%)	
30-39 years	20 (54%)	10 (48%)	20 (40%)	
40-49 years	6 (16%)	7 (33%)	2 (6%)	
> 50 years	4 (10%)	2 (10%)	1 (3%)	
Basic level of nurse training				.78
Registered practical nurse	3 (8%)	2 (10%)	3 (9%)	
Diploma	30 (81%)	18 (86%)	28 (82%)	
Baccalaureate	4 (11%)	1 (5%)	3 (9%)	
Highest level of nurse education/training				.75
Diploma	30 (81%)	16 (77%)	30 (89%)	
Baccalaureate	4 (11%)	3 (14%)	3 (9%)	
Graduate (Masters)	0 (0%)	0 (0%)	0 (0%)	
Highest level of education outside of nursing				.45
Diploma*	15 (41%)	11 (52%)	13 (38%)	
Baccalaureate	5 (13%)	0 (0%)	3 (9%)	
Employment status				.56
Full time	23 (62%)	8 (38%)	19 (56%)	
Part time	14 (38%)	13 (62%)	15 (44%)	
Years worked (mean, SD)	8 ± 5	12 ± 5	8 ± 5	.02
Years worked on unit (mean, SD)	5 ± 3	9 ± 5	5 ± 4	.01

* Diploma in this category also included post basic certification courses

Table 3: Nurse's research experience at baseline

	High	Low	Control	p
Attended courses or workshops on critical reading skills	13 (35%)	6 (29%)	14 (41%)	.61
Attended courses or workshops on research methods or statistics	11 (29%)	7 (33%)	10 (29%)	.98
Involved in research projects in past year	9 (24%)	9 (43%)	13 (38%)	.21
Read nursing journals	35 (95%)	16 (77%)	28 (83%)	.13
Read few times each year	20 (54%)	1 (5%)	20 (59%)	
Read monthly	13 (35%)	15 (71%)	8 (24%)	
Read other medical or education journals	22 (60%)	12 (13%)	16 (47%)	.30
Read few times each year	11 (30%)	4 (19%)	6 (18%)	
Read monthly	8 (22%)	8 (38%)	9 (27%)	

Table 4: Research Utilization Questionnaire Subscale Scores for Research Working Group Respondents: Pre and Post Intervention

Unit designation for work group participants	n	Support	Attitude	Access	Use	Overall
Pre – intervention						
High	18	3.12 ± .63	*3.98 ± .31	2.97 ± .46	3.43 ± .44	*3.57 ± .29
Low	6	2.83 ± .39	3.52 ± .43	2.86 ± .62	3.0 ± .75	3.20 ± .50
Post – intervention						
High	17	3.07 ± .86	4.04 ± .39	3.15 ± .46	3.68 ± .58	3.69 ± .36
Low	4	3.16 ± .49	3.93 ± .34	3.32 ± .58	3.65 ± .26	3.66 ± .66

* Significant difference between participants at baseline (p < .05)

experience, unit experience, basic level of nursing education, and highest level of education. Variables were retained in the model if they were significant at .15 level. The following model was determined: Use = $-.16 + .64$ (attitude) + $.30$ (support); R-square = .51; $p = .0002$. We reran the regression for all respondents, to determine the influence of the intervention. The following model was determined: Use = $-.36 + (0.63)$ attitude + $(.20)$ support + $(.20)$ access + $(.19)$ critical reading skills; R-square = .48, $p = .0001$.

As attitude, was a significant predictor of research use, we determined the predictors of a positive attitude towards research use. The same variables (excluding use) were entered into the stepwise regression procedure. The following model was determined: Attitude = $2.68 + .27$ (support) + $.10$ (group) + $.22$ (participation) + $.28$ (post basic education) + $.25$ (previous involvement in research projects) - $.1$ (work experience), R-square = .52, $p = .0001$. Group was used as a proxy measure for unit, as based on the analysis of variance, we knew that nurses on different units reported different attitude scores.

In this study, research use was best predicted by nurses' attitude towards research, access to research supports, and support of research activities. A positive attitude towards research was best predicted by participation in research activities, organizational and peer support of research, previous involvement in research projects, post-basic education (inclusive of non nursing and certificate courses), being a beginning practitioner and unit assignment.

Strengths and Limitations

The strength of this study was in its study design: randomization of intervention, pre-post test design, use of comparison groups and validated measures of research utilization. However, there were limitations which influence the generalizability of the results. First, while the nurses by virtue of employment on units were randomized, the number of units actually randomized was too small to determine a unit effect. Furthermore, nurses who participated in the working groups volunteered and were more likely to be interested in research activities. Secondly, the strength or impact of the intervention was influenced, substantially, by the internal staff nurse and organizational changes taking place at the time as the hospital was involved in merger of nursing staff from another hospital. Thirdly, we have not completed the research cycle and reported the clinical research findings back to the unit. The nurses acknowledge and are supportive of the delay but they wish to "see" the results. Finally, the questionnaire response rate was low. While this response rate was similar to other nursing research utilization surveys (Hatcher & Tranmer, 1997), it may be a reflection of the impact of the internal environment on nurses' overall need and desire to focus on clinical demands, leaving little if any time to focus on non-clinical

demands, which they may not perceive as important. Thus there may be a bias between nurses who responded and those who did not.

Discussion

Nurses who responded to the survey generally reported in the range of uncertainty to agreement on the subscales of attitude, support, access and use of research. Subscale scores were similar to those reported in this institution in the past and in other studies (Champion & Leach, 1986; 1989; Hatcher & Tranmer, 1997). The RUQ was able to detect variation in responses but inclusion and further testing of items or factors may better measure research utilization. For example, the support scale only determines the degree to which peers and leaders support the use of research findings in practice. The scale does not determine the nature of the support (e.g., rewards and incentives) or other types of support (e.g., flexible time). The RUQ asks about the support, use and access to research, without clearly understanding from the staff nurse's perspective her conceptualization of research. Nurses in this project reported that they had been previously involved in research, but we did not determine the exact nature or definition of this involvement. Estabrooks (1999b) articulates the need to better define the concept of research utilization, develop the related measurement science to use in studies, develop a clear understanding of the nature and structure of evidence in nursing practice and of the relationship of research to evidence. At best, we can say this group of staff nurses did not have strong positive feelings about research.

However, participation in research activities had an impact on nurses who were directly involved. Nurses, who were working group participants, self-selected to be participants. Thus, their attitude towards research was more than likely positive to begin with. But in the working group on the low participation units limited exposure to one workshop day and ongoing contact regarding the clinical project activities increased the research utilization scores to same level as the working group nurses from the high participation units. While they were not involved in the initial critique of the literature, during their workshop, they were able to interpret the literature review within the context of their clinical unit and influence the design and implementation of the clinical research study. For example, they accurately identified key variables to collect (i.e., nursing workload measures, unit activity) that would influence the outcome of interest in the clinical study (i.e., sleep patterns). The RUQ scores for workshop participants in both groups were higher than the group mean scores for unit staff, suggesting that participation in and exposure to research is beneficial for those directly involved in the activity. It would appear that involvement in the research process within the context of one's clinical setting could be a significant determinant of research use.

Table 5: Research Utilization Questionnaire Subscale Scores for All Nursing

Respondents: Pre and Post Intervention

Unit designation	n	Support	Attitude	Access	Use	Overall
Pre – intervention						
Control	34	2.86 ± .61	3.53 ± .57	3.06 ± .42	3.07 ± .69	3.23 ± .50
Low	21	2.88 ± .63	3.40 ± .54	2.82 ± .57	2.98 ± .70	3.13 ± .46
High	37	3.12 ± .81	*3.87 ± .44	3.05 ± .49	*3.40 ± .52	3.52 ± .37
Post – intervention						
Control	24	3.20 ± .62	3.67 ± .40	3.13 ± .41	3.20 ± .69	3.40 ± .36
Low	39	3.06 ± .51	3.50 ± .50	3.05 ± .50	3.03 ± .68	3.25 ± .45
High	29	3.14 ± .72	*3.89 ± .47	3.07 ± .51	3.46 ± .71	*3.56 ± .42

*Significant differences between nurses on the high participation unit in comparison to nurses on both the control and low units (p < .05)

The intervention had no effect on RUQ scores of staff nurses on the participating units who were not directly involved in the working group activities. This lack of effect may be related to two factors: (a) the focus of the intervention on skill and knowledge acquisition and not dissemination and transfer, and (b) the influence of the ever-changing, complex, traditional hospital environment on nurses' ability to attend to and be involved in research related activities. The nursing participants in the research working groups and the nursing research coordinator for the research study communicated continuously throughout the clinical research study with the unit staff nurses through poster presentations, written communications and one to one discussions. This activity only occurred on the low and high participation units and was rather ad hoc and not a planned part of the intervention. Furthermore, as previously stated, we have not shared the research findings with the nurses from the participating units. Thus nurses who were on the unit during the clinical research study have probably "forgotten" about the study and new nurses were not exposed to the clinical research project. The "slowness" of the research process is often seen as a barrier to clinical decision-makers. There is a need to actively produce and disseminate research results, even if they are temporary, as this would help to keep the research "alive" and ongoing. Understandably, this task is difficult for researchers.

In this study there was variation in RUQ scores at baseline, between nursing units, suggesting that both individual and organizational determinants influence research utilization. Nurses on the high participation units reported significantly higher attitude and use scores at baseline in comparison to the control units. The high participation units had more specialized medical services (e.g., orthopedics and oncology versus general medicine and surgery) and more full time, younger, and less

experienced staff that reportedly read more nursing journals. The low participation units had more part time staff with more years of experience. This group reportedly was involved in research projects within the past year and had the highest percentage of nurses who pursued post basic education outside of nursing. The baseline demographic characteristics and research experience of nurses on the control units showed greater similarity to those of nurses from the high participation units. This suggests that research use is multifactorial. The influence of the organizational processes on research utilization activities has been reported (Kitson, Ahmed, Harvey & Thomas, 1996; Kitson, Harvey & McCormack 1998; Titler et al., 1994). In this study positive attitude toward research, access to and support of research use accounted for 50% of the variation in research use scores. If we could influence attitude and provide the support and knowledge, perhaps research utilization (broadly defined) would increase. However, as in this study and others, interventions to enhance research use have had limited success. This may be related to our poor appreciation of the influence of other important determinants such as organizational or unit culture.

The values and beliefs of each individual and unit (and organization) influence organizational culture. Individual beliefs and values about research utilization are influenced by personal, professional, social, economic and cultural factors (Tranmer, Squires, Brazil, Gerlach, Swan, Johnston, et al., 1998). The regression analysis showed that variables related to active involvement in research (participation, research project involvement, furthering education) and unit support were predictive of a positive attitude towards research. Length of employment was negatively correlated with attitude towards research. This finding, is somewhat disconcerting as within the next decade, the majority of the nursing workforce will be seasoned workers, who may or may not be supportive of research.

The younger nurses who are actively pursuing further education and the new graduates who will enter the workforce with baccalaureate preparation and beginning research experience will challenge these nurses. Sorrells-Jones and Weaver (1999) report, in a 3 part series, that as organizations shift to "knowledge" as the primary basis for production, we will need to experiment with processes and structures that support knowledge work and cluster individuals with different but complimentary skills. They report that this direction may be difficult in hospitals, as they are characterized by "multiple administrative layers that manage single functions. Communication flow is hierarchical and often cumbersome. Organizational values reflect a desire for order and discipline carried out by loyal, compliant employees who avoid risk and see failure as a negative" (p.20). In this study, the research project, was a "vehicle" for nurses to engage in creative approaches to their work. It was more developmental and meaningful for the nurses engaged in the research activities as they participated in the generation of new knowledge that was relevant to their practice. The workshops (and grant) provided protected time; the research investigator provided research expertise and the nurses provided clinical expertise – a complimentary team focused on knowledge use and generation. This knowledge work was supported within the group but the effect was diluted by the realities of each unit. Nevertheless, the research project as a vehicle for knowledge generation and change has potential. It will require that leaders provide the necessary supports and facilitate the process, within the context of the practice setting. There is an urgent need to address the academic (practice knowledge) development of nursing, especially within acute care settings (Power, 1999); involvement in research activities may be one way to address this need.

Conclusion

Participation in a clinically relevant research project is a vehicle for nurses to acquire research knowledge and skill. The research project provides the necessary support for and access to the research, which positively influences nurse's attitude towards research. The research project team provides for mentorship from research experts and collegial support for the contemplation and examination of practice in scholarly manner. Nurses not involved directly in the research project and team were not influenced by the conduct of the research. This may be related to the impact of the hospital organizational environment and culture on staff nurses' ability to engage in non patient care based activities. Nursing departments will be particularly challenged in the future to develop and create strategies that promote and develop the research potential and scholarship of new graduates and to excite and enthuse nurses who have trained and practiced in traditional settings. Attitude is key, but process and supports are essential.

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References

- Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, N.J.: Prentice-Hall Inc.
- Canadian Nurses Association. (1999) Trends and issues: Results of CNA's external scanning survey. Canadian Nurses Association. Ottawa.
- Champion, V., & Leach, A. (1986). The relationship of support, availability and attitude to research utilization. Journal of Nursing Administration, 16, 19-37.
- Champion, V., & Leach, A. (1989). Variables related to research utilization in nursing: An empirical investigation. Journal of Advanced Nursing, 14, 705-710.
- College of Nurses of Ontario (1999) Entry to practice competencies for Ontario Registered Nurses as of January 1, 2005. Author.
- Estabrooks, C. (1998). Will evidence based nursing practice make practice perfect? Canadian Journal of Nursing Research, 30, 15-36.
- Estabrooks, C. (1999a). Mapping the research utilization field in nursing. Canadian Journal of Nursing Research, 31, 53-72.
- Estabrooks, C. (1999b). The conceptual nature of research utilization. Research in Nursing & Health, 22, 203-206.

- Hatcher, S., & Tranmer J. (1997). A survey of variables related to research utilization in nursing practice in the acute care setting. Canadian Journal of Nursing Administration, 10(3), 31-52.
- Hodnett, E. (1996). A strategy to promote research based nursing care: Effects on childbirth outcomes. Research in Nursing & Health, 19, 13-20.
- Kitson, A., Ahmed, L., Harvey, G., & Thomson, D. (1996). From research to practice: One organizational model for promoting research-based practice. Journal of Advanced Nursing, 23, 430-440.
- Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence based practice: A conceptual framework. Quality in Health Care, 7, 149-158.
- Lomas, J. Improving research dissemination and uptake in the health sector: Beyond the sound of one hand clapping. (1997). Anonymous. McMaster University Centre for Health Economics and Policy. C971: Analysis Policy Commentary.
- Power, C. (1999). The academic development of nursing and health human resources planning. Canadian Journal Nursing Leadership, 12, 27.
- Sorrells-Jones, J., & Weaver, D. (1999). Knowledge workers and knowledge intense organizations (Parts 1-3). Journal of Nursing Administration, 29(7-10)
- Simpson, T., Lee, E., & Cameron, C. (1996) Relationships among sleep dimensions and factors that impair sleep after cardiac surgery. Research in Nursing & Health. 19, 213 – 223.
- Snyder – Halpern, R. & Verran, J. (1987). Instrumentation to describe subjective sleep characteristics in healthy subjects. Research in Nursing & Health, 10, 155 – 163.
- Thurston, N., Tenhove, S., Church, J., & Weisberg, R. Nursing research in Canadian teaching hospitals - replication and extension. (1993). Anonymous. Department of Nursing, Foothills General Hospital and Faculty of Nursing, University of Calgary, Calgary, AB.
- Titler, M., Kleiber, C., Steelman, V., Goode, C., Rakel, B., & Barry-Walker, J., et al. (1994). Infusing research into practice to promote quality care. Nursing Research, 43(5), 307-313.
- Tranmer, J., Coulson, K., Holtom, D, Lively, T., & Maloney, R. (1998). The emergence of a culture that promotes evidence based clinical decision making within an acute care setting. Canadian Journal of Nursing Administration, 11, 58-70.
- Tranmer, J., Kisilevsky, B., & Muir, D. (1995). A nursing research utilization strategy for staff nurses in the acute care setting. Journal of Nursing Administration, 25, 21-29.
- Tranmer, J., Squires, S., Brazil, K., Gerlach, J., Swan, B., Johnston, J., et al. (1998). Factors that influence evidence-based decision making. In Anonymous, Making decisions: Evidence and information. (pp. 3-92). Sainte Foy, Quebec: Multimondes and National Forum on Health, Health Canada.