

Towards using evidence in oncology: Identified issues and suggested solutions

by Nicole Allard and Christina Jalbert

Abstract

Recently, there has been a growing concern in clinical settings regarding the use of evidence-based best practices. We have noted the appearance of various training activities and resources that can be used by oncology nurses. Using a time series design, this study highlights that the actual utilization of evidence in practice remains unchanged after an intervention of a formal PowerPoint presentation of evidence on symptom management in oncology, and the distribution of reference folders with research results to nurses. It emerges that very few nurses are interested and that the nurses who use evidence are those who do it as part of their functions (staff manager, clinicians). Recommendations for practice, education and research are suggested.

Canada will face a real explosion of cancer within a few years. In fact, with aging baby-boomers and an overall increase of the Canadian population, cancer was estimated to become the leading cause of death by 2010. According to the latest Canadian cancer statistics (Canadian Cancer Society, 2010), it was estimated that in 2010 in Quebec, there would be 45,200 new cancer cases (173,800 in Canada) and 20,300 deaths due to this disease (76,200 in Canada). Based on current incidence rates, close to 40% of Canadian women and 45% of Canadian men will get cancer during their lifetimes. The most frequently diagnosed cancers remain breast cancer for women and prostate cancer for men, respectively. However, lung cancer continues to be the leading cause of cancer-associated death in both women and men (Health Canada, 2009; Canadian Cancer Society, 2010).

Besides being a very difficult personal journey to live through, cancer has a devastating effect on our country's economic health. It is estimated that in the next 30 years, approximately six million Canadians will receive a cancer diagnosis; about three million Canadians will die from the disease; direct health costs linked to cancer will top 39 billion dollars, and cancer-associated disability will produce the loss of more than 101 billion dollars in tax revenue. This is a large-scale social challenge, as it brings about ill health to both human beings and the economy. Cancer has huge implications in health care, and its impact is growing steadily because of population aging. Furthermore, Quebec is experiencing the heaviest economic burden for health care among all Canadian provinces and among most Organisation for Economic Co-operation and Development (OECD) countries (Duhamel, 2006).

Individuals living with cancer and their loved ones need information on assessing and managing their symptoms during the acute and, more importantly, postoperative phases, particularly as they often get to go home on the day of the medical intervention. That particular finding motivated the government to establish the *Programme québécois de lutte contre le cancer (PQLC)*, i.e., the Quebec Cancer Control Program. It aims at establishing an integrated approach so that lifestyle supports prevention, early screening, improvement to the quality

and regular development of investigation services and treatments and accessibility to health care, particularly palliative care (Comité consultatif sur le cancer, 1998). The PQLC gives serious consideration to continuity in service delivery and support all along the disease trajectory.

According to Sackett, Rosenberg, Gray, Haynes and Richardson, evidence-based health care practice evidence is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients..." This practice requires the integration of individual clinical expertise with the best available external clinical evidence from systematic research... (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). In the U.S., the Oncology Nursing Society is now offering the latest evidence and providing online access to research articles in order to promote evidence-based nursing practice. This website and other available resources provide recent guidelines to relieve many listed symptoms such as fatigue, pain, nausea and vomiting, anorexia, peripheral neuropathy, lymphedema, depression and anxiety (Oncology Nursing Society, 2009b, 2010).

Individuals living with cancer and their family members most certainly require emotional support. Support is considered as essential to the effectiveness of all interventions designed for people living with cancer (Comité consultatif sur le cancer, 1998). Incidentally, according to the Canadian Association of Nurses in Oncology, both the adherence to practice standards in oncology and the work of interdisciplinary teams represent important characteristics of the follow-up and support provided (2006). So clinical care protocols and guidelines based on empirical evidence constitute the most promising and effective avenues to define and improve quality of care to the cancer population (Miller & Kearney, 2004). For example, the oncology patient navigator reflects a positive change to meet the need for continuity and integration in care, as expressed by people with cancer (de Serres & Beauchesne, 2000). This being said, it is important to consider physical symptoms, emotional distress and adaptation to illness in people with cancer and not just financial, morbidity and satisfaction indicators.

Nurses and caregivers working in oncology face situations on a daily basis where their theoretical and practical knowledge is necessary to deal with physical and psychological symptoms. This is why they ought to be provided with the best scientific evidence that will guide their professional practice, as these care providers don't have enough time nor skills to research them (Canadian Association of Nurses in Oncology, 2006). Guidelines must contain appropriate and accurate information for patients and be based upon recognized research and reference sources to the extent possible. According to the latest information, educational interventions for support and problem resolution are best suited to help people living with cancer (Comité consultatif sur le cancer, 1998). Studies by Leventhal and Johnson (1983) provided a theoretical basis grounded in the self-regulation theory and an empirical structure to prepare patients for surgery, stressful medical procedures and radiation therapy. Other researchers have also studied the effectiveness of a psychoeducational nursing intervention and demonstrated that this type of information improves the return to normal daily functioning after surgery (Hill, 1982; Moore, 1996), reduces the distress associated with stressful medical procedures and pain (Suls & Wan, 1989) and helps patients with HIV better manage and relieve their symptoms in a self-regulation perspective (Côté & Pepler, 1999; Côté & Pepler, 2002). A recent clinical study (Allard, 2005) also suggests that a psychoeducational telephone nursing intervention based on self-regulation theory and the concept of redirection is effective in improving the level of functioning and reducing emotional distress in women with breast cancer during the first three weeks following surgery.

Despite the growing number of available documents, rigorous studies documenting research results and optimal ways to manage symptoms in people with cancer, few interventions or little monitoring have been

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effectively implemented in clinical settings. Unfortunately, the non-use of research results gives rise to many disadvantages for both nursing staff and patients and their families. The rapid development of health services means major challenges are on the way for all professionals. In point of fact, the latter must perfect health care techniques to provide the population with the best possible services (Halabis-Nassif & Hatem, 2008). But nursing practice and nurses' decision-making tend to be based upon the oncology caregivers' own clinical experience, on the nurses' experience or on tradition (Egerod & Hansen, 2005; Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003). By not keeping themselves up to date on the latest evidence, the nursing profession and nurses within it are stagnating and are not maintaining the expected quality standards. This directly results in a decline in the quality of care and satisfaction of the patients using health care services (Halabis-Nassif & Hatem, 2008).

Theoretical framework

Estabrooks' theoretical framework (1999) was used with a view to measure, disseminate and use research results in practice. This author operationalized the notion of overall research utilization in nursing practice according to three distinct concepts: direct, indirect and persuasive utilization. This theoretical framework, these concepts and the measures used by Estabrooks were employed to assess the knowledge translation in oncology nursing practice, before and after the presentation of research results, so that the latter are known and used. Additionally, instrumental research utilization is sought out, which is defined as the concrete application of research and is usually translated into a useable format such as a protocol (Estabrooks, 1999). Dissemination of research results constitutes an important step of evidence-based practice. Formal dissemination has the advantage of reaching a much wider and diverse audience and increasing the probability of a change within care settings (Goulet, Lampron, Morin, & Heon, 2004).

Methodology

A time series design was used, which is a study with many separate measurements of research utilization in practice before and after the intervention, with a single group of participants and at determined moments. The effects of the variable of interest are assessed by observing discontinuity within the series rather than by comparing it with another group. This type of design requires few participants (Fortin, 2010).

The intervention consisted of a formal presentation (PowerPoint presentation during clinical lunchtime conferences) of evidence on symptom management in oncology and the distribution of reference folders with research results (Oncology Nursing Society, 2009a, 2010) involving each of the units concerned (chemotherapy, radiation therapy, surgery clinic). Observation 01 represents the data collection period (usual care) before the intervention while observations 02 and 03 pertain to two data collection periods after the intervention. Observation 02 was performed about one month after the first data collection to measure the short-term impact the intervention had, while observation 03 was completed approximately six months after the intervention to check on the participating nurses' retention level.

Participants

The final convenience sample was composed of one man and 17 women belonging to the nursing profession. Participants in this study were required to be members of the Order of Nurses of Quebec (OIIQ) and to practise in oncology.

Sites

The participants were recruited in two regional centres and one urban centre in Quebec. All three provide services and treatments to people with cancer.

Instruments

First, a sociodemographic questionnaire specifically designed for this study (including age, gender, education level, number of

years of experience as a nurse and clinical function in the institution) was completed by the participants.

Second, a questionnaire for utilization of evidence in one's practice developed by Estabrooks (1999) (original English version) was selected and translated into French, as it has the advantage of being very short. This questionnaire includes three questions that measure the overall utilization of research results: i.e., direct, indirect and persuasive utilization. The answers to the questions were coded according to the following criteria: 1=never, 2=one or two work shifts, 3=(not coded), 4=(not coded), 5=about half the work shifts, 6=(not coded), 7=almost all work shifts, and 8=I don't know. The selected model representing the conceptual structure of research utilization demonstrates a high goodness of fit R^2 , with nearly 70% of the dependent variable variance being explained by this model. The instrument's internal consistency varies from 0.77 to 0.91 for the subscales ($n=600$) (Frasure, 2008). It was translated into French and validated by bilingual experts in oncology using Vallerand's double inverse translation method (1989).

Consent

The consent of nurses in oncology who participated in this pilot project was solicited before the formal presentation on research utilization during the lunchtime conferences. They completed the short sociodemographic questionnaire and the overall utilization of the research results questionnaire (time 01).

Confidentiality

All data relating to the study were placed in a locked filing cabinet. Only the main researcher and research assistants had access to the confidential data. So that participants could not be identified, the research file was identified with a code and no name appeared there. All scientific publications or communications emanating from this research are written so that no single individual can be identified.

Project flow

Nurses in oncology (including patient navigators) were solicited and engaged throughout the research project. In each of the centres, an advertisement was circulated to invite oncology clinicians to attend a presentation on research utilization in oncology. This presentation on research evidence lasting approximately one hour was given at each of the centres. Then the nurses who wanted to take part in the study were informed of the goal and flow of the research project and signed an informed consent form. Folders containing definitions, risk factors, numerous references and measuring instruments on the main research results concerning the management of the main symptoms in oncology were put together based on the most recent evidence issued by the Oncology Nursing Society. These symptoms included pain, neuropathy, fatigue, insomnia, level of functioning, depression, telephone intervention, mucositis, nausea and vomiting (Updated Oncology Nursing Society putting evidence into practice resources, 2009b). These folders were provided to the participants working in each of the care units taking part in the study. Later, data collections 02 and 03 were performed over the phone by a research assistant, one month and six months after the intervention (i.e., the presentation on research results). These collections aimed at determining whether research utilization had changed among participants after the presentation and distribution of folders presenting evidence on relieving of physical and psychological symptoms.

Completed analyses

The instrument's degree of homogeneity on research utilization was checked with Cronbach's alpha coefficient. These results showed a 0.82 coefficient for the whole instrument (including all its subscales), which indicates a good internal consistency. Moreover, Cronbach's alpha coefficients were measured for each of the instrument's subscales (Table 1).

This means that internal consistency is good for the overall score and for that of the persuasive utilization as a coefficient above 0.80 is

considered acceptable for a research instrument (Burns & Grove, 2007, 2009). However, Cronbach's coefficients for the direct and indirect utilization subscales did not reach this threshold. Later descriptive analyses such as averages and standard deviations were calculated to find out the distribution of subjects according to sociodemographic data for each participant and according to research utilization. Furthermore, Pearson's correlations were completed to observe whether there was any link between the three data collections. Finally, step-by-step discriminant function analyses were done to determine which sociodemographic variables best predicted the research utilization level.

Results

Sample characteristics

During the data collection, which took place over a six-month period, 18 participants were recruited (i.e., one man [5.6%] and 17 women [94.4%]). Distribution of subjects according to sociodemographic data is shown in Table 2.

Results regarding research utilization

First, averages were calculated for each of the subscale scores and overall score, this for each of the three data collection times (Table 3).

Then correlations were completed between the three data collection times (Table 4). Firstly, the correlation between time sums 01 and 02 was found significant with regards to research utilization with a coefficient of $R=0.86$. Secondly, correlation between time sums 01 and 03 did not yield any significant result at $R=0.44$. Thirdly, correlation between time sums 02 and 03 was $R=0.35$, which is not useful to predict research utilization between these two times.

Subscales	Cronbach's alpha
Direct utilization	0.61
Indirect utilization	0.71
Persuasive utilization	0.83
Total	0.82

Education	
College Training	1 (5.6 %)
Certificate	2 (11.1 %)
University	9 (50 %)
Master's	4 (22.2 %)
Missing	2 (11.1 %)
Specialization	
Yes	10 (55.6 %)
No	6 (33.3 %)
Missing	2 (11.1 %)
Function	
Graduate Nurse	5 (27.8 %)
Patient Navigator	1 (5.6%)
Head Nurse	3 (16.7 %)
Staff Manager	1 (5.6 %)
Nurse Technician	3 (16.7 %)
Educator	1 (5.6 %)
Graduate Nurse	1 (5.6 %)
Missing	2 (11.1 %)
Clinician	1 (5.6 %)

Stepwise regressions were performed on the results thus obtained to check which variable could be the best predictor of research utilization. The data's error margin was 0.05%. First, at time 01, education is significant in predicting direct research utilization in the setting with a variance of $R=0.54$. No sociodemographic characteristic is statistically significant to predict indirect utilization. By and large specialization could be a key characteristic to predict persuasive research utilization at time 01 with a variance of $R=0.567$. For time 02, no sociodemographic characteristic predicted direct or indirect utilization of research results. On the contrary, specialization yielded a variance of $R=0.686$ which was significant to predict persuasive utilization at time 02. Furthermore, education allied to specialization increased the probability of persuasive utilization of evidence with a variable $R=0.790$.

Lastly, no sociodemographic characteristic predicted direct or indirect utilization at time 03. Regarding persuasive utilization at time 03, years of experience could be an enabling factor with a variance $R=0.596$. Finally, one-way ANOVAs were performed. None proved significant between times 01, 02 and 03 for any of the subscales.

Discussion and recommendations

Practice

We started with a teaching intervention on evidence in the clinical context. Study participants received a one-hour training session on research results. At the end of the session, folders were handed out to the participants, so that they could easily refer to research results published by the Oncology Nursing Society (Adams et al., 2009) regarding the symptoms most frequently reported by patients. The study results were obtained with the help of a questionnaire that participants completed at three different times according to established protocol. The authors were surprised by the results yielded by the descriptive analyses such as averages and standard deviations. They observed that averages were essentially the same at times 01, 02 and 03. Therefore, they can state that the teaching intervention on evidence did not deliver expected results. Research utilization did not increase over the six months the study lasted. The study authors wondered about the factors that may have influenced the outcomes.

First, the recruitment of participants in the three sites was done on a volunteer basis. It is likely that the nurses who agreed to take part in the study already had an interest in or were making use of research results in their practice. The fact that they continued to utilize evidence in their usual and regular manner could explain the similarity between the averages obtained through result analysis. Furthermore, the study sample was small and composed of only 18 participants. With a larger sample, we may have been able to observe better internal consistency and greater variation in research utilization in a health care setting following the intervention. Uncontrollable factors associated with care settings must also be taken into account.

Range: 1-7	Direct Utilization	Indirect Utilization	Persuasive Utilization	Time Sum Average
Average at time 01	4.19 (1.68)	5.17 (1.62)	4.44 (1.85)	4.5 (1.40)
Average at time 02	3.89 (1.45)	4.83 (1.54)	4.53 (1.66)	4.47 (1.00)
Average at time 03	4.69 (1.62)	4.60 (1.55)	4.06 (1.77)	4.47 (1.30)

	Time 01	Time 02	Time 03
Time 01	----	0.864	0.437
Time 02	0.864	----	0.354
Time 03	0.437	0.354	----

Participants were not released from duty to do readings or literature surveys related to evidence. They had to find free time outside of their work hours to develop new research skills and knowledge.

As a result of the current shortage and economic crisis within the Quebec health care system, nurses are overworked and lack time to consult recent research evidence. It is beyond question that the lack of personnel and financial resources is detrimental to the dissemination and utilization of research evidence in care settings (O'Donnell, 2003). This barrier is clearly demonstrated in a variety of studies (Hannes et al., 2007; O'Donnell, 2003; Thompson, McCaughan, Cullum, Sheldon, & Raynor, 2005). Studies completed on barriers to research utilization state that support among colleagues and reserving time for consulting and implementing best practices are both crucial. The use of evidence in practice requires both guidance and a sustained coaching process to reach desired objectives (Halabis-Nassif & Hatem, 2008; McCormack & Slater, 2006; Oranta, Routasalo, & Hupli, 2002).

According to a study completed in 2002 by Oranta, Routasalo and Hupli, the main barriers to research utilization as identified by respondents were: the bulk of research work is published in a foreign language (especially in English), the fact that physicians do not cooperate with the implementation of evidence-based practice changes, and that statistical analyses are hard to understand (Oranta et al., 2002). Furthermore, clinicians do not have time to develop the skills necessary to finding, grouping and rigorously analyzing recent research evidence and did not receive the required training for understanding and critiquing research articles or clinical practice guidelines (Glacken & Chaney, 2004; Halabis-Nassif & Hatem, 2008; Hannes et al., 2007; McCormack & Slater, 2006; O'Donnell, 2003).

After completing their analyses, the authors observed that sociodemographic factors did not enable one to predict daily research utilization in the workplace. Education was the only characteristic to prove useful in predicting research utilization at work. On the one hand, nurses with advanced education have greater awareness of nursing research. In the bachelor degree program, nurses are introduced to research in a 45-hour course. These nurses have been directly enabled to find and use the latest research results. Greater receptivity to research and utilization of evidence have been found in nurses holding a bachelor or master's degree compared to those with college training in nursing (Bonner & Sando, 2008; Halabis-Nassif & Hatem, 2008; Koehn & Lehman, 2008; Oranta et al., 2002). Clinical nurse specialists are the ones who use evidence most frequently in their daily work because this requirement is directly tied to their function, and they have both the time and means to achieve this aspect of their work. On the other hand, nursing specialization is also a facilitator in the integration of evidence in everyday work. Specialized nurses regularly develop their knowledge in one particular area such as oncology in order to use and disseminate research results in patient care. Finally, nurses' years of experience also exert a great influence on care delivery. Experienced nurses have a power of influence (persuasive utilization) over new nurses. If an experienced nurse bases her work on evidence, it is likely she will inspire a younger nurse to develop work skills by using research results. Moreover, it would be wise for care unit managers to review nurses' workload and make enlightened decisions regarding the time required for introducing innovations (Halabis-Nassif & Hatem, 2008).

Training

A study completed in 2008 by Halabis-Nassif and Hatem reaches interesting conclusions. These authors assert that the development of evidence-informed nursing practice requires the combination of three factors: an organization that supports the project, adequately teaching research methodology, and a positive perception of research on the part of nurses. According to them, it would be worthwhile developing nurses' knowledge in research methodology and coaching them during their first projects. There is currently a trend towards continuing professional education, competency and demonstrating clinical expertise in nursing. Continuing professional education

can be provided in care units by a nurse facilitator. The latter is a resource nurse assigned to a facilitator position who showcases his or her value and usefulness amidst the restructuring of knowledge and practices within an organization (Whyte, Simon, & Booker, 2007). Continuing professional education as supported by a nurse facilitator has the following advantages: 1) maintaining high standards of care and services, 2) improving and developing various aspects of care and services, 3) insuring personnel competency, and 4) guaranteeing practitioners' responsibility for their actions. In a nutshell, the facilitator plays a key role in the transfer of clinical knowledge to daily nursing practice (McCormack & Slater, 2006). A good attitude on the part of the nurse facilitators is a crucial factor in establishing and maintaining a trust relationship (Oranta et al., 2002). Moreover, nurse facilitators can empower nurses to create changes that improve patient care. They can also improve work conditions by increasing employee satisfaction in the workplace (Cameron-Buccheri & Ogier, 1994).

Research

In 2007, Moriarty, O'Hara et Byron (2007) examined the implications of implementing a professional facilitator in a palliative care setting. The study aimed at describing and evaluating the setting up of two Macmillan nurse positions as facilitators. Macmillan nurses, who are community health nurses in the United Kingdom, play a significant role in palliative care services, providing patients and their loved ones with direct or indirect care. These practitioners have at least five years of experience—two of which have been in cancer care or palliative care—and they also have taken specialized courses in pain management and psychological support. Two Macmillan nurse facilitator positions were created for this study. Their activities related to three practice areas, i.e. educational programs for nurses, creating a support resource and the application of palliative care guidelines. The positions were “dual role”; during the first part of the week, the position holders were palliative care nurses and the rest of the week, they assumed their nurse facilitator role by facilitating education, support and various needs. However, the authors do not specify what proportion of their time was assigned to the facilitator role during the week (Moriarty et al., 2007).

Results showed the palliative care provider role was enhanced in the community after the nurse facilitators were hired. The role was extremely well received by health care professionals. Indeed, the most important factor having contributed to the successful implementation of these positions was their dual role nature. The fact these nurses continued to work regularly with the palliative care team facilitated the acceptance of the new nurse facilitator role. Finally, they brought about major changes in the three areas their activities focused on over the two-year study. For example, they trained nurses on a variety of topics such as pain, support to provide to families, support material for the provision of care, etc. They also established a list of 17 palliative care resources that nurses can refer to at any time to hone their practices. As well, they implemented in the setting palliative care-related guidelines and research evidence. These included deploying research results for cancer and palliative care-related pain and symptom management. According to the authors, the promotion of clinical guidelines was selected as a key indicator of the nurse facilitator position's success within the team. Besides, when the nurse facilitators commenced work, there were differences in practice regarding adoption of guidelines for palliative care. Care protocols and techniques had become so inappropriate that they bordered on obsolescence. A number of initiatives were put in place so that practice would conform to guidelines and the latest evidence (Moriarty et al., 2007).

Interviews with physicians, nurses and administrators confirmed that the Macmillan nurses played a key role by supporting the adoption of leading-edge care programs. Interviewed nurses reported that nurse facilitators contributed significantly to the area of palliative care in the space of two years, as the quality of care had greatly improved over that period. Finally, hospital administrators hope

that care will continue to be based on exemplary practice and that nurses will have a deeper understanding of the role and services provided by the specialized palliative care team (Moriarty et al., 2007). It is, therefore, recommended that research be continued into

the recent implementation of the nurse facilitator role in Quebec and Canada in order to identify its incidence on research utilization in oncology (Canadian Partnership Against Cancer: Health Human Resources Action Group, 2009). ❏

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