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Nursing in Peril:
A Case for Visibility

On the front page of London's most respected newspaper, *The Times*, the following headline appeared on July 30, 1996: "Nurse-Robots Have Doctors' Heads Turning." The article went on to say that nurse-robots are replacing the tasks previously assumed by nurses, such as giving medication, removing bed-pans, and so forth. The pilot phase of the project has proven so successful that authorities are now considering widespread adoption of robots to replace nurses.

My first reaction was to dash off a letter to *The Times* denouncing this action and explaining what nursing is and is not. My second reaction was to dismiss this trend as unique to British nursing's development, or lack thereof. I consoled myself by thinking that this would never happen in North America, because professional nursing is far too advanced in its thinking and in its practice. Unfortunately, careful reading of the article revealed that this new technology had originated in the United States and had spread to England.

Will robots eventually replace nurses worldwide? Impossible, you may think – but think again. On both sides of the Atlantic, the public, as well as many nurses, have difficulty defining what nursing is. For many, nursing is defined in terms of a set of tasks and not in terms of the intricacies and complexities of care embedded in the caring nurse-patient relationship.

Despite incredible advances in the development of professional nursing, the image of nurses that the media projects is that of hand-maiden to the doctors, and nursing as a set of tasks. One may ask how the media continues to get away with perpetuating this image if it has no basis in reality. The answer is obvious. There must be some truth to this image.

This past year, because of illness – my own and in my family – I experienced nursing firsthand in three countries, on both sides of the Atlantic. I found more similarities in the quality of nursing than I had expected. Unfortunately, far too many nurses are task-oriented, thus giving credence to the stereotype.

Is this the beginning of the end of nursing? Impossible, some will say. Impossible because of the numbers of nurses and the invaluable service they render to society. Think again. Peter Drucker points out that at the turn of the century the largest populations of workers were farmers and live-in servants. Ninety years later these groups barely exist. Although farmers and domestic servants were everywhere, as a class they were invisible. Drucker attributes their invisibility to the fact that they were not organized as a group. As a class, nurses may be more visible inasmuch as they are organized. However, they remain vulnerable. Their work remains invisible to far too many. The invisibility of nurses may lead to our profession's demise.

The sociologist DeVault coined the term "invisible" to describe the work of women that goes largely unrecognized, unacknowledged, and often overlooked, because it is ill-defined. Some have argued that nurses' work is like women's work. Its success rests on the internal work of planning, scheduling, monitoring, and arranging patient care – cognitive activities that are not visible to most but critical for smooth functioning and success. Some have attempted to make the invisible visible, by helping nurses articulate what they do and how they do it.

At the patient level, we often speak of the invisible work of nursing, suggesting that caring activities are difficult to qualify and quantify. I would argue the contrary. In a recent randomized control trial we conducted with families who had a child with a chronic physical disorder, families had little difficulty articulating what the nurses did and how the nurses made a difference (Feeley et al., in preparation). Nursing is often invisible because it is nonexistent. When nurses focus on the task, they are not doing nursing. A case in point is symptom management. The patient complains of a symptom and the nurse responds in a stimulus manner with a prescribed solution. Often, there is little exploration and/or assessment of the symptom, of the different methods of relief, or of the effectiveness of the nursing action(s). Another reason why nursing is invisible is that nurses have difficulty valuing what they do and how they do it. Because nurses deal with the ordinary – the everyday – they have devalued, minimized, or attributed little significance to their role in patients' recovery and health.

Another aspect of the problem is that nurses often believe that anyone could do what they do. This is not so. Anyone who has had the benefits of a knowledgeable, skilled nurse recognizes the art, science, and beauty inherent in nursing. When nurses do value what they do, sometimes they and others want to dissociate it from nursing and call it by another name. Many have dropped the word "nurse" from their

title or relabelled what they do in terms of the function. Recently, I was explaining nursing to a well-informed colleague. She said, "Oh, I see. Why don't you call yourself nurse/social worker."

It is somewhat ironic that England, the birthplace of Florence Nightingale, the mother of professional nursing, may be helping to sow the seeds of nursing's demise with the introduction of nurse-robots. However, let us not be fooled. Nursing, as we know it, is in peril of extinction. In nature, species have become extinct when they have become invisible to their own and their fellow species. If we can learn from nature, nurses need to become more visible. They need to create a new image of nursing based in the reality in which nurses practise nursing in its fullest sense – by practises with both hands and theoretical knowledge (Drucker, 1994). They need to begin by valuing the uniqueness of their knowledge and skills and communicating these to others through actions and words. These are but preliminary steps. Without these minimal initiatives, we will indeed become relics of the past.

Laurie N. Gottlieb
Editor

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ÉDITORIAL D'ÉTÉ

Les soins infirmiers en péril :
il faut en accroître la visibilité

En première page de la livraison du 30 juillet 1996 du *Times*, le grand quotidien londonien, on a pu lire la manchette suivante : « Les médecins se retournent sur les robots-infirmiers ». L'auteur de l'article poursuit en disant que les robots-infirmiers accomplissent désormais des tâches qui étaient jusque là l'apanage des infirmières, comme l'administration de médicaments, l'enlèvement des bassins de lit, etc. La phase pilote de ce projet a connu un tel succès que les instances songent aujourd'hui à remplacer le personnel infirmier par des robots. Ma première réaction a été d'envoyer une lettre bien sentie au *Times* pour dénoncer cette action et expliquer ce que sont les soins infirmiers. Dans un deuxième temps, je me suis dit que cette tendance était propre à l'évolution ou à l'absence d'évolution des soins infirmiers en Grande-Bretagne. Je me suis consolée en pensant que cela n'arriverait jamais en Amérique du Nord car les soins infirmiers professionnels y sont beaucoup trop avancés sur le plan de la réflexion et de la pratique. Malheureusement, après avoir attentivement lu tout l'article, j'ai constaté que cette nouvelle technologie provenait des États-Unis et s'était frayée un chemin jusqu'en Angleterre.

Des robots finiront-ils par remplacer les infirmières dans le monde entier ? Impossible, me direz-vous, mais pensez-y bien. Des deux côtés du continent, le public et de nombreuses infirmières ont de la difficulté à définir les soins infirmiers. Pour beaucoup, les soins infirmiers sont un ensemble de tâches qui ignore tout des complexités inhérentes à la relation bienveillante entre l'infirmière et le patient.

En dépit des progrès mirobolants des soins infirmiers professionnels, l'image de l'infirmière que véhiculent les médias est celle d'une servante au service des médecins tandis que les soins infirmiers sont définis comme un ensemble de tâches. On est en droit de se demander pourquoi les médias continuent de véhiculer une telle image qui n'a aucun fondement dans la réalité. La réponse se passe d'explications, il doit y avoir un fond de vérité dans cette image.

L'an denier, pour cause de maladie des deux côtés de l'Atlantique (tant sur le plan personnel que familial), j'ai pu goûter aux soins infir-

miers dispensés dans trois pays et ai constaté plus de similitudes dans la qualité des soins infirmiers que ce à quoi je m'attendais. Malheureusement, beaucoup trop d'infirmières se polarisent sur l'accomplissement de tâches, ce qui ajoute foi au stéréotype de l'infirmière.

Doit-on penser que c'est le commencement de la fin des soins infirmiers ? D'aucuns diront que la chose est impossible. Impossible en raison du grand nombre d'infirmières et des services inestimables qu'elles rendent à la société. Mais réfléchissez bien. Peter Drucker fait observer qu'au tournant du siècle, la majorité des travailleurs étaient des agriculteurs et des domestiques. Quatre-vingt-dix ans plus tard, ces deux groupes n'existent pratiquement plus. Et même si les agriculteurs et les domestiques étaient omniprésents en tant que classe, ils étaient pratiquement invisibles. Drucker impute leur invisibilité au fait qu'ils n'étaient pas organisés comme groupe. En tant que classe, les infirmières sont sans doute plus visibles dans la mesure où elles sont organisées. Il n'en reste pas moins qu'elles demeurent vulnérables. Leur travail reste invisible pour un trop grand nombre de gens. Et cette invisibilité risque d'aboutir à la mort de notre profession.

Le sociologue DeVault a inventé l'expression de travail « invisible » des femmes pour décrire le travail des femmes qui est essentiellement méconnu, inconnu et même souvent négligé parce qu'il est mal défini. D'aucuns prétendent que le travail des infirmières ressemble au travail des femmes. Son succès dépend de la planification, de l'ordonnancement, de la surveillance et de l'organisation des soins prodigués aux patients, des activités cognitives qui sont invisibles à la majorité mais cruciales au bon fonctionnement et au succès des soins infirmiers. D'aucuns se sont employés à rendre l'invisible visible en aidant les infirmières à expliquer ce qu'elles font et comment elles s'y prennent.

Au niveau des patients, nous parlons souvent du travail invisible des infirmières, ce qui semble insinuer que les activités de bienveillance sont difficiles à qualifier et à quantifier. Je pense exactement le contraire. Dans un récent essai randomisé que nous avons mené auprès de familles dont un enfant souffrait d'une affection physique chronique, les familles n'ont eu aucun mal à dire ce que les infirmières accomplissaient et toute la différence qu'elles faisaient (Feeley et al., en cours de préparation). Les soins infirmiers sont souvent invisibles car ils sont inexistants. Lorsque les infirmières se concentrent sur la tâche, elles ne prodiguent pas de soins à proprement parler. Mentionnons à titre d'exemple le traitement des symptômes. Un patient se plaint d'un symptôme et l'infirmière réagit par stimulus en proposant une solution pre-

scrite. Souvent, elle n'analyse pas ni n'évalue le symptôme, pas plus que les différents modes de soulagement ou l'efficacité des procédures infirmières. Une autre raison pour laquelle les soins infirmiers sont si peu visibles tient au fait que les infirmières ont de la difficulté à valoriser ce qu'elles font et la façon dont elles le font. Étant donné que les infirmières soignent le quotidien et l'ordinaire, elles ont dévalué, minimisé ou attaché trop peu d'importance au rôle qu'elles jouent dans le rétablissement des malades et leur état de santé.

Un autre aspect du problème tient au fait que les infirmières croient trop souvent que leur travail est à la portée de tout le monde. Or il n'en est rien. Quiconque a reçu les soins d'une infirmière qualifiée et bien informée est obligé de reconnaître l'art, la science et la beauté qui entrent dans les soins infirmiers. Lorsque les infirmières valorisent leur travail, elles ont alors tendance à vouloir le dissocier des soins infirmiers et à l'appeler d'un autre nom. Beaucoup d'entre elles ont supprimé le mot infirmière de leur titre ou ont réétiqueté ce qu'elles font en termes de fonctions. Récemment, je m'efforçais d'expliquer les soins infirmiers à une collègue bien informée qui m'a répondu : «Oh je vois, pourquoi ne prenez-vous pas le titre d'infirmière/travailleur social».

Il est ironique de penser que c'est l'Angleterre, le pays qui a donné naissance à Florence Nightingale, la mère des soins infirmiers professionnels, qui est sans doute en train de signer l'arrêt de mort de la profession d'infirmière en introduisant des robots-infirmiers. Mais ne nous laissons pas berner. Les soins infirmiers tels que nous les connaissons sont menacés d'extinction. Dans la nature, les espèces disparaissent dès l'instant où elles deviennent invisibles pour leurs propres membres et pour les autres espèces. Si nous devons tirer des leçons de la nature, nous pouvons dire que les infirmières doivent devenir plus visibles. Elles doivent changer d'image et projeter une nouvelle image des soins infirmiers basée dans la réalité où les infirmières exercent leur métier dans son sens le plus large, c'est-à-dire avec leurs deux mains et une vaste somme de connaissances théoriques (Drucker, 1994). Elles doivent commencer par valoriser l'unicité de leurs connaissances et de leurs compétences et démontrer cette unicité par leurs actions et leurs paroles. Ce ne sont là que des mesures préliminaires. Mais à défaut de prendre ces initiatives assez minimes, nous courons alors le risque de devenir des vestiges du passé.

Laurie N. Gottlieb
Rédactrice en chef

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Focus:
Symptom Management

GUEST EDITORIAL

Symptom Management:
What We Know and What We Do

Nursing has considered symptoms as perceptions, experiences which are often distressing, as opposed to the medical perspective which views symptoms as keys to diagnosis. Diminishing distressing symptoms has been the essence of nursing since its inception. In her book *Notes on nursing: What it is and what it is not*, Florence Nightingale highlights the relief of pain and discomfort as central to nursing (Nightingale, 1946). Much knowledge has been acquired about certain distressing symptoms, particularly pain, but less about others. The mechanisms of pain, factors that exacerbate it, pharmacological agents that decrease it, and comfort measures that soothe it have all been studied by different disciplines, including nursing. There are even textbooks on the nursing management of pain where this information is detailed (Donovan & Watt-Watson, 1992).

However, there are still data suggesting that nurses do not utilize the knowledge they have regarding pain management (Abbott et al., 1992; Donovan, Dillon, & McGuire, 1987), particularly children (Johnston, Abbott, Gray-Donald, & Jeans, 1992; Schecter, Allen, & Hanson, 1986). This is due, in part, to inconsistent knowledge and inconsistent beliefs about the value of changing practice among nurses. In this issue, Howell, Foster, Hester, Vojir, and Miller describe the implementation of a pain management program for nurses in a pediatric setting. They clearly describe the process of the acquisition of knowledge by staff. From this description, the comprehensiveness involved in changing staff attitudes toward pain management is evident and can partly explain why less comprehensive and less rigorously implemented programs have failed. These authors followed through with their program and found that ultimately nurses truly

"owned" components of the program's pain assessment and management strategies, as shown by their personal modifications which maintained the principles of the program.

Another reason why nurses do not appear to manage pain adequately in spite of what is known about pain is, in fact, that there is such an abundance of knowledge that it is difficult to make decisions about which particular strategies to use in specific situations. Carroll, in the "Designer's Corner" of this issue, discusses evidence-based practice in the area of pain management. A strong justification for the use of meta-analysis in the area of pain management is made, based on its strengths and the weaknesses of other approaches to synthesizing current knowledge. A caveat is made on the use of meta-analysis, in that it can only be as strong as original articles are scientifically sound. Given the abundance of literature on pain management, this is less of a problem for that particular symptom.

While we do know a lot about physical pain, and the above-mentioned articles in this issue help shed light on how we can implement moving that knowledge into practice, the area of psychic pain is much less understood. Observation and documentation of symptoms of schizophrenia have been "medicalized," the goal being accurate diagnosis. Baker, however, used qualitative methods to examine the subjective experience of patients suffering from schizophrenia and found that psychic pain was the overriding symptom, or distressing element of their experience. Furthermore, the fluctuating intensity of their psychic pain, as opposed to other symptoms, was a key signal of changes in their illness trajectory. The reports she was able to elicit from her participants of their emotional pain were moving and poignant. Baker puts these reports into a framework that can be used by nurses, taking the reports beyond a beginning appreciation of what their experience is like.

There are other symptoms that were not addressed in this issue, but the major concerns of nursing, to both sift out what we really know about the symptom and then to use that knowledge in managing the symptom, apply to all symptoms. The examples in this issue of different stages of knowledge about symptoms – firstly, understanding what it is the patient is experiencing (Baker); secondly, knowing how to access and synthesize current knowledge (Carroll); and thirdly, implementing this in practice (Howell et al.) – cover a wide range of strategies.

I wish to thank the contributing authors for their submissions and responses, as well as to thank others who submitted manuscripts that

could not be published in this issue. The reviewers were prompt and thorough, and the time and criticism they gave was invaluable. The Editor-in-Chief, Dr. Laurie Gottlieb, insisted on the highest calibre and gave me the opportunity to see at close range how the *CJNR* has become a first-class journal under her direction. The Managing Editor, Jill Martis, offered wonderful support and organization, so that my task of reading, reviewing, and deciding on manuscripts for final selection for this issue was only pleasurable.

Celeste Johnston
Guest Editor

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Le point :
Gestion des symptômes

Gestion des symptômes :
ce que nous savons
et comment nous agissons

Les sciences infirmières considèrent les symptômes comme des perceptions ou des expériences qui sont souvent sources de désarroi, contrairement à l'optique médicale qui juge que les symptômes sont essentiels au diagnostic. L'atténuation des symptômes douloureux est au coeur même des soins infirmiers depuis leur création. Dans son livre *Notes on nursing : What it is and what it is not*, Florence Nightingale fait valoir que le soulagement de la douleur et de l'inconfort est au coeur même des soins infirmiers (Nightingale, 1946). On sait beaucoup de choses sur certains symptômes douloureux, notamment sur la douleur, mais moins sur d'autres. Les mécanismes de la douleur, les facteurs qui l'exacerbent, les agents pharmacologiques qui permettent de l'atténuer et les mesures de confort qui l'apaisent ont tous été étudiés par différentes disciplines, notamment par les sciences infirmières. Il existe même des manuels sur le traitement infirmier de la douleur où ces données sont décrites en détail (Donovan & Watt-Watson, 1992).

Il existe néanmoins encore certaines données qui portent à croire que les infirmières n'utilisent pas à bon escient les connaissances qu'elles ont sur le traitement de la douleur (Abbott et al., 1992 ; Donovan, Dillon & McGuire, 1987), particulièrement chez les enfants (Johnston, Abbot, Gray-Donald & Jeans, 1992 ; Schecter, Allen & Hanson, 1986). Cela s'explique en partie par le manque d'homogénéité des connaissances et des croyances sur la valeur d'un changement de pratique chez les infirmières. Dans ce numéro, Howell, Foster, Hester, Vojir et Miller ont traité de l'application d'un programme de traitement de la douleur pour les infirmières dans un cadre pédiatrique. Elles y décrivent clairement le processus d'acquisition des connaissances par

le personnel infirmier. Cette description démontre clairement l'importance de la tâche à accomplir pour faire changer les attitudes du personnel à l'égard du traitement de la douleur et explique partiellement pourquoi des programmes moins détaillés et mis en oeuvre avec moins de rigueur ont échoué. Ces auteurs ont fait le suivi de leur programme et ont constaté qu'en définitive, les infirmières «possèdent» vraiment les éléments du programme qui ont trait aux stratégies d'évaluation et de traitement de la douleur, comme en témoignent les modifications personnelles qui ont contribué à préserver les principes du programme.

Une autre raison pour laquelle les infirmières ne semblent pas traiter la douleur comme il se doit en dépit de tout ce que l'on sait de la douleur tient au fait qu'il existe une telle abondance de connaissances qu'il est difficile de prendre des décisions sur les stratégies qu'il y a lieu d'utiliser dans certaines situations. Carroll, dans la rubrique «*Le coin du concepteur*» de ce numéro, analyse la pratique fondée sur l'expérience clinique dans le domaine du traitement de la douleur. Elle justifie notamment le recours à la méta-analyse dans le domaine du traitement de la douleur, compte tenu des atouts de cette démarche et des faiblesses d'autres méthodes pour faire la synthèse des connaissances existantes. Elle émet un avertissement à l'égard de la méta-analyse en ce sens que sa solidité ne peut pas dépasser la valeur scientifique des articles originaux. Compte tenu de la somme de documents parus sur le traitement de la douleur, cela constitue un problème mineur pour ce symptôme en particulier.

Même si nous savons beaucoup de choses sur la douleur physique et que les articles déjà mentionnés dans ce numéro éclairent la façon dont nous pouvons mettre ces connaissances en pratique, le domaine de la douleur psychique est nettement moins bien compris. L'observation et la documentation des symptômes de la schizophrénie ont été «médicalisées», en vue de poser un diagnostic exact. Baker a cependant utilisé des méthodes qualitatives pour analyser l'expérience subjective des sujets souffrant de schizophrénie et a constaté que la douleur psychique constituait le symptôme prééminent ou l'élément douloureux de leur expérience. En outre, l'intensité fluctuante de la douleur psychique, par opposition à d'autres symptômes, est l'un des principaux signes de changement dans la trajectoire de la maladie. Les récits qu'elle a obtenus de ses participants sur leur douleur affective sont troublants et poignants. Baker prend ces récits et les met dans un cadre qui peut servir aux infirmières en les amenant au-delà d'une compréhension de ce à quoi ressemble leur expérience.

Il y a d'autres symptômes dont ce numéro ne traite pas, mais la volonté des infirmières de tamiser à la fois ce qu'elles savent sur le symptôme et d'utiliser ces connaissances pour gérer le symptôme, s'appliquent à tous les symptômes. Les exemples que contient ce numéro sur les différents stades de la connaissance des symptômes (premièrement, essayer de comprendre ce que ressent le patient [Baker], deuxièmement, savoir comment trouver et faire la synthèse des connaissances actuelles [Carroll], et troisièmement, mettre ces connaissances en pratique [Howell et al.]) visent un vaste éventail de stratégies.

Je tiens à remercier les collaboratrices de leurs articles et de leurs réponses, et également tous ceux et celles qui ont présenté des manuscrits que nous n'avons malheureusement pas pu publier dans ce numéro. Les critiques ont fait un travail fouillé et rapide qui nous a été d'un précieux concours. La rédactrice en chef, Mme Laurie Gottlieb, a insisté sur les normes les plus rigoureuses et m'a permis de constater que la RCRSI était devenu une revue de tout premier ordre sous son égide. La rédactrice administrative, Jill Martis, m'a fait bénéficier de son aide et de son extraordinaire organisation, de sorte que j'ai éprouvé un véritable plaisir à lire, à examiner et à décider des manuscrits à publier dans ce numéro.

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Subjective Experience of Symptoms in Schizophrenia

Cynthia Baker

On a procédé à une étude qualitative en utilisant la méthode d'interactionisme interprétatif afin d'examiner les expériences intérieures des personnes atteintes de schizophrénie, expériences qui encerclent, mobilisent et façonnent leur conscience des symptômes de leur maladie et leurs réactions à ceux-ci. On a recueilli les données biographiques d'un échantillon intentionnel de quinze personnes atteintes de cette maladie. Leurs récits montraient que la douleur psychique dominait leur vie; ce thème était mêlé à ceux du manque de maîtrise, d'échec et de perte. La douleur psychique représentait pour les répondants le facteur essentiel dans le développement de la prise de conscience des fluctuations dans la progression de leur maladie. Les résultats indiquent que les infirmières pourraient faciliter la maîtrise des symptômes chez les schizophrènes en s'occupant de la détresse émotionnelle qui pénètre chaque aspect de leur existence et en les aidant à procéder à leur introspection afin d'augmenter leur conscience des composantes précises de la détresse psychique.

A qualitative study using the interpretive interactionism method was conducted to investigate the inner experiences of individuals with schizophrenia that surround, mobilize, and shape their awareness of, and responses to, the symptoms of their illness. Biographical data were collected from a purposive sample of 15 respondents suffering from this illness. Their narratives indicated that psychic pain dominated their lives; this theme was intertwined with the themes of lack of control, failure, and loss. Psychic pain was the key factor in informants' developing recognition of fluctuations in the course of their illness. The findings suggest that nurses may facilitate symptom monitoring in individuals who have schizophrenia, by attending to the emotional distress permeating every facet of their existence and by helping them look inward, to heighten their consciousness of specific components of psychic distress.

For many years nurses have been teaching individuals with chronic physical illnesses, such as diabetes and hypertension, the specific self-care skill of symptom monitoring. The clinical approaches they use, however, are not readily transferable to schizophrenia. No instruments are available to detect the presence or severity of this long-term mental illness whose symptoms may exacerbate and remit for many years. The only potential indices are objective and subjective observations of feelings, thought processes, and behaviours. In order to identify fluctuations in symptoms, the person with schizophrenia must develop an awareness of subjective indicators of the illness. He or she must, therefore, manage the illness by using those very cognitive processes being

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affected by its symptoms. Yet studies have found that about half of individuals with schizophrenia develop an ability to detect signs of impending decompensation. Many are able to use this knowledge to abort a full-blown relapse by seeking early medical intervention (Heinrichs, Cohen, & Carpenter, 1985; Herz & Melville,1980; McCandless-Glimcher, McKnight, Hamera, Smith, & Plumlee, 1986).

A qualitative study was conducted to determine how this self-care knowledge is acquired. The processes involved in the evolution of the ability to detect signs of relapse have been presented elsewhere (Baker, 1995). This paper will describe the inner experiences that surround, mobilize, and drive informants' evolving symptom awareness and symptom monitoring.

Background Literature

Bleuler (1950) considered unawareness of symptoms to be a part of the schizophrenic disorder. This opinion was supported by the World Health Organization's (1973) International Pilot Study of Schizophrenia, which found that 97% of a sample of 811 recent-onset cases lacked insight. Similarly, Wilson, Ban, and Guy (1986) reported that 89% of a multinational sample of 768 individuals with schizophrenia denied having symptoms of a mental illness. Despite these findings, there is considerable evidence that a post hoc awareness of psychosis is common once symptoms begin to subside (Amador, Strauss, Yale, & Gorman, 1991; McEvoy et al., 1989; Wing, Monck, Brown, & Carstairs, 1964). Furthermore, social scientists have found that denial of illness may be a strategy to protect one's self-concept from being stigmatized (Estroff, Lachicotte, Illingworth, & Johnston, 1991; Lally, 1989). Lally (1984), for instance, collected psychiatric patients' theories of their illness and identified a number of techniques that respondents used to keep a sense of self-competence, such as choosing a less stigmatizing label for their illness and distancing themselves from their symptoms.

Studies have also shown that many individuals with schizophrenia recognize early indicators of decompensation. In Chapman's 1966 landmark phenomenological study of the decompensation process, patients described feelings of over-stimulation and of trying to maintain self-control before perceptual impairment began. Subsequent studies identified a predictable sequence of intensifying feelings and confusion during relapse (Docherty, Van Kammen, Siris, & Marder, 1978; Donlon & Blacker, 1973), which led to an interest in determining whether individuals with schizophrenia recognize and respond to the onset of a

relapse. Herz and Melville (1980) found that 70% of a sample of patients were able to describe prodromal symptoms preceding a recent psychosis; Heinrichs et al. (1985) reported that 63% of patients being followed at an outpatient clinic detected the prodromal phase of a psychotic episode; and McCandless-Glimcher et al. (1986) found that 59% of their sample of clinic patients identified indicators of relapse. Evidence suggests that individuals with schizophrenia not only recognize illness symptoms but also take actions to mitigate their effect. When symptoms increased among a sample of 20 chronic mental patients during a two-year study, report Breir and Strauss (1983), 17 tried to control them by talking themselves out of them, decreasing their involvement in activity, or increasing their involvement in activity. Similarly, Harris (1990), guided by Orem's self-care model, identified actions that inpatients with schizophrenia initiated on their own to meet the self-care requisite of maintaining a balance between solitude and social interaction. Following rules, looking away, and watching television alone were some of the methods they used to meet solitude needs; joking, participating in groups, and talking sensibly are examples of the self-care actions these patients took to meet their need for social interaction. A study by Falloon and Talbot (1981) identified frequently used strategies to cope with persistent hallucination among a sample of outpatients with schizophrenia. These included changes in activity, interpersonal contact, manipulation of physiological arousal, and attentional control.

Purpose

Previous studies, then, demonstrate that individuals with schizophrenia have fluctuating and differing levels of awareness of their symptoms, and also that they interact actively with their symptoms in order to alleviate them. However, little attention has been paid to the subjective web of meanings and emotions in which this recognition and management of symptoms is grounded and shaped. Furthermore, the inner experience of schizophrenic symptoms is alien to the observer and thus difficult to grasp. A greater understanding of this dimension would be useful for nurses in helping clients understand and monitor their symptoms.

Method

Interpretive interactionism as developed by Norman Denzin (1989) is the methodology guiding this study. This qualitative, nonpositivist

method of inquiry is intended to provide genuine understanding of phenomena through thick description of the everyday lives of people. Developed for the investigation of personal problems that are also public issues, interpretive interactionism is based on the premise that public programs are more effective if they take into account the perspectives of those they are designed to serve. In the present study, symptom exacerbation in schizophrenia was viewed as a personal trouble that often provokes a collective, societal response and is a public issue.

The subject matter of an interpretive interactionist study is existentially relevant biographical experience. The investigator seeks narratives about the experiences of individuals living the personal trouble being studied. In particular, the investigator looks for personal stories that describe significant experiential moments that mark a person's life. Denzin argues that these epiphanies have the potential to transform people. Epiphanies sought out by the investigator may be (a) major, in which a sudden shattering experience alters a person's life irrevocably, (b) minor, in which underlying elements of a situation are illuminated for the person, (c) relived, in which the transformational moment connected to an experience occurs at a later period, or (d) cumulative, in which the epiphany is the result of an accumulation of events in a person's life (Denzin, 1989, p. 17).

At the outset, the investigator clearly states her or his value position on the phenomenon under study. Thus the following personal values of the investigator were identified prior to data collection: individuals with chronic mental illness benefit from understanding their illness, and self-management of the course of the illness is helpful to individuals with long-term mental illness. An interpretive interactionist study has five steps. They are deconstruction, capture, bracketing, construction, and contextualization (Denzin, 1989, p. 27).

Deconstruction

Deconstruction is carried out before the data are collected. Its purpose is to provide a critical interpretation of previous work so that underlying biases are identified. A deconstructive reading of the literature indicated that published studies focusing on symptom monitoring treat it as a cognitive skill detached from the experience of the symptoms. Work on the subjective experience of schizophrenia has primarily been concerned with the negative impact of the diagnostic label, rather than the symptoms, on the sense of self.

Capture: Sample

Capture involves going to the social worlds in which the personal trouble being investigated occurs, to collect narratives about the phenomenon (Denzin, 1989, p. 127). In this study, therefore, 15 respondents with schizophrenia, forming a non-probabilistic, purposive sample, were recruited through three psychiatric institutions located in Moncton, N.B.: the Moncton Mental Health Clinic, the Moncton City Hospital Psychiatric Unit, and the Dr. Georges L. Dumont Psychiatric Day Unit. Criteria for inclusion were that respondents had been hospitalized at least once for schizophrenia, that their acute psychotic symptoms had remitted, and that they were being followed on an outpatient basis. In addition, they were purposively selected so that the sample would include individuals of both sexes, various age groups, varying ability to recognize signs of relapse, and different lengths of time since diagnosis (Table 1).

Table 1
Sample Characteristics

Gender		Education	
Male	10	Less than grade 12	3
Female	5	Grade 12	2
		Some technical	1
Age		Some university	2
18 years	1	Technical diploma	6
20-29	2	University degree	1
30-39	6	**Employment**	
40-49	4		
50-59	1	Unemployed	9
70	1	Employed part-time	2
		Sheltered workshop	3
Marriage		Retired	1
Single	11		
Common-law	1		*N* = 15
Divorced	3		

Each in-depth interview with respondents took approximately two hours. All but one was audiotaped; one informant asked that the interviewer take notes instead because the tape recorder made him feel paranoid. The interviews were flexible and involved working from a general list of questions about the respondents' experience of their

illness history, family history, social history, and residential history. For instance, respondents were asked the following two questions: (a) Most people's mental health goes up and down. Can you tell me about a period in your life when your mental health was at its best? (b) Can you tell me about a period in your life when your mental health was poor? A short semistructured questionnaire was also administered in order to collect socio-demographic and treatment data.

Bracketing

Bracketing is a term borrowed by Denzin from Husserlian phenomenology. In interpretive interactionism it refers to the dissection of informants' narratives in order to isolate and list the essential recurring elements of the phenomenon being studied (Denzin, 1989, p. 55). In this step, preconceptions about the phenomenon are put aside; epiphanies are identified in the informants' narratives, which are divided into key experiential units; phrases and statements within these units that relate to the phenomenon are located; the meaning of these phrases is interpreted; these meanings are inspected for recurring features that speak to the phenomenon.

Construction

Construction builds on bracketing. Bracketed elements are reassembled into a coherent whole by identifying how they occur within the experience being investigated. In this study, construction yielded a sequence of processes in the evolution of the ability to detect signs of relapse, which, as noted earlier, have been described elsewhere.

Contextualization

In the last step, contextualization, the investigator relocates the constructed processes in the informants' biographies. Narratives that either embody the processes or illustrate variations in their stages are identified. The aim is to discover how specific lived experiences shape the phenomenon being studied. It is this personal, subjective context surrounding the evolution of the ability to detect signs of relapse that will be described in this paper.

Controls in the Research Procedure

Several measures were taken to enhance the trustworthiness of qualitative studies (Lincoln & Guba, 1985; Sandelowksi, 1986). Four respon-

dents were ask to validate the processes involved in detecting relapse and the contextual themes shaping these processes. They stated that these findings reflected their personal lived experience. An extensive audit trail included a reflexive journal, all data reduction products, data interpretations, and data reconstruction products. This trail was audited by a doctoral nursing student, who was able to trace the emerging analysis and found an appropriate fit between the illustrating experiences and the interpretive categories. However, from the postmodern, interpretive interactionist perspective, findings of any study are interpretations and as such are always provisional and incomplete (Denzin, 1989, p. 64). Furthermore, Sandelowski (1993) points out the contradictions inherent in using consensual and corroboratory procedures to establish reliability in studies based on a paradigm that assumes reality to be multiple and constructed.

Ethical Considerations

The human subjects committee of the University of Texas at Austin approved the study proposal. The facilities where informants had been treated also approved it. Respondents signed a consent form; confidentiality was maintained at all times; and a prime concern during the interviews was the well-being of the respondents. Names used here are fictitious.

Findings

Psychic pain dominated informants' biographies. It appeared to be a central feature of their existence and was the inner context driving the evolution of self-monitoring for signs of relapse. On the one hand, this pain seemed to be an *integral part* of the symptoms of schizophrenia; it increased when symptoms worsened and was the personal trouble that drove informants into the public arena in search of relief. On the other hand, pain appeared to be a *consequence* of the symptoms of the illness; it resulted from incidents involving a lack of self-control, failure, and loss when symptom exacerbation wrought havoc on informants' lives. Pain, control, failure, and loss were, therefore, the problematic experiences underlying the epiphanies that shaped informants' interpretations of their symptoms and the course of their illness (Table 2). Each of these contextual themes will be discussed in turn. Informants will be quoted liberally to provide thick descriptions of these disturbing inner experiences.

Table 2	
Contextual Themes	
Pain	**Failure**
Accompanying symptoms	Letting oneself down
Resulting from symptoms	Letting others down
Control	**Loss**
Losing control of self	Losing a normal life
Controlled by others	Losing roles
	and relationships

Pain

The psychic pain that permeated informants' narratives ranged in intensity from instances of chronic, subacute discomfort to periods of terrible anguish. As noted, a part of their distress seemed to be a constituent of their symptoms, and many respondents specifically used the term "pain" to describe this emotional distress.

Informants depicted the onset of schizophrenia as their introduction to a life of persistent emotional discomfort. Often their distress was low level. Alex said, "You can't ever feel comfortable." Brian said of it, "I'm always nervous and tense with people." Jim observed, "I always have a little edge," and both Marjelaine and Dan said they were "always a little paranoid." Marjelaine described herself as constantly feeling "a little anxious." Guy said he had a persistent feeling that "something is holding me back, like putting your foot forward and something's in your way and you can't..." Luc described a feeling of worry and insecurity that never left him, and Doug commented that he continually feared that people would hurt him.

Informants illustrated these subacute feelings of distress by contrasting them with how they felt before the onset of the symptoms of schizophrenia. For instance, Jason said of this earlier period of his life: "You're not even conscious that there's something wrong – you're just seeing what's going on." Similarly, Doug said, "When my mental health is at its best, I don't realize that I have a problem. This is what I use as a reference point but I've never really come back to that point since I got into a serious nervous-breakdown situation."

Low-level discomfort periodically intensifies. Informants used very strong adjectives to describe this phenomenon. They spoke of a living

hell, of torment, terror, rage, despair, and wanting to kill themselves to escape the anguish. Jim said, for instance, "I feel like suicide. I feel like taking a knife and putting it right through my chest." Doug described an acute fear that completely overwhelmed him. Even thinking of periods when this happened, he said, brought "a feeling of terror rippling over me."

High levels of psychic pain seemed to stem from what several respondents referred to explicitly as "being out of touch with reality." Although informants' visions, voices, and strange thoughts were not always negative, they tended to become increasingly distressful, eventually taking over their lives for stretches of time. Mike and John spoke of periods when they had been "tormented by voices" that wouldn't leave them alone. John explained that voices had become "so intense I couldn't sleep – they were just at me constantly." Jane, a 50-year-old informant whose dead mother "keeps coming back," said these apparitions were initially occasional and comforting. However, they soon became persistent and frightening. She said of them: "The death is there. It's scary, it's cool. They don't act the same way.... I was scared she'd be getting it in her mind to take me with her, and that's what scared me." And sometimes being out of touch with reality was more than tormenting or frightening; it was terrifying. Guy, a young man, described it as being "like a nightmare...I was really scared and I started seeing, like, people coming out of the woodwork. It's just thoughts that were going through my mind. It's just, like, right there, there they are, and all of a sudden, in another five minutes, there's another one over there."

The pain that informants experienced as a consequence rather than a component of symptom exacerbation appeared to be a diffuse and fairly continuous aspect of their lives. Their experiences of lack of control, failure, and loss will be described to highlight the sources of this pain.

Control

Problematic experiences with control resulted from fluctuations in the intensity of symptoms and were painful for informants. These experiences involved what they referred to as losing control and being controlled by others.

Losing control. Informants were often overcome by unpredictable and uncontrollable feelings that determined what they did and how they behaved. Frequently, this loss of control was minimal and affected

only their ability to manage day-to-day activities. At other times, it was a major epiphany that drastically disordered their lives and had serious consequences for their future.

Minor threats to informants' sense of self-control included unpredictable daily fluctuations of energy, anxiety, and what many referred to as paranoia. For instance, Annette, a 33-year-old woman, described her life as a constant battle with an unreliable amount of energy. She believed firmly in the importance of being active but her determination was often overwhelmed and she couldn't even bring herself to get out of bed. Similarly, spurts of agitation often interfered with informants' daily lives. Alex explained: "Sometimes with this disease you have panic situations where you're panicking, like, quite severe, and then good days when you don't have that type of thing." He considered this to be "crippling...it affects your lifestyle and your being able to take care of your own response and life situations." Sudden surges of paranoia also put enormous restrictions on several informants' ability to do what they wanted. Annette described an incident earlier in the day when such feelings had emerged suddenly and disrupted her daily walk with a group of friends. During the outing, she began to feel that the people in the cars driving by were laughing at her and talking about her, so she surprised her friends by insisting that the group alter their route and led them way off course to a street where there were no cars.

Besides facing minor ongoing threats to their sense of self-control, informants had experienced dramatic incidents during which their behaviour had become completely disruptive. Many had tried to hurt themselves during one of these episodes. John described a terrible incident where losing control of himself seriously endangered his life:

> Everything was so distorted that I felt that everyone was out to get me. And I got to my home and then I tried to impale myself on a stake. I was just terrified. It was terror. And then when I got home I slashed my wrist and that didn't work fast enough so I cut off my hand.

Fortunately, a friend was at John's home within seconds of this and he was in the operating room in less than half an hour. His life and his hand were saved, although his wrist is encircled by a large scar and his hand is puffy, discoloured, and difficult to use.

Being controlled by others. Frequently, the upshot of losing control of oneself was that others took over and imposed controls on informants, which was another element that contributed to their inner distress. Important sources for this included involuntary hospitalizations and the experience of having to depend on others.

Many informants had been brought to hospital against their will, by friends, relatives, employers, and police. Although the resulting hospitalization was often perceived as a refuge from the turmoil that had overwhelmed them, it could also be lived as a terrible loss of control. Doug explained why one of his hospitalizations had been this type of experience:

> I was put on various drugs. I don't know if I can remember them all. I think one of the main ones was stelazine. There was a whole host of drugs I was taking there. It was as if they were trying to find a cure for I don't know what. Then I was told that I wasn't allowed to leave the hospital unless I agreed to six months of injections outside the hospital. I was never all right there. At one time I refused to eat. I was just fed up with this and so I quit eating and this doctor, he says, "If you don't eat we're giving you shock treatment," just like that. So I was totally devastated. This is terrorism to me – when I'm forced to take drugs, when I'm secluded, I'm watched everywhere I go. It disrupted my life and terrorized me.

Being dependent on others, especially on family members, to meet basic survival needs was common for informants, and this also contributed to their sense of being controlled by others. Jim, a 36-year-old who resented his lack of autonomy, described how family control works.

> My parents say that if you want to come to the cottage this summer you got to come back after two nights and you've got to take the train in Truro. They say you have to do this and you have to do that. You have to get your beard trimmed, you have to get your hair cut before you go. I'll give you the money but you got to do it before we leave and you've got to talk to your doctor and you're not going until I talk to your doctor, until you see your doctor and get your needle.

The problem, Jim explained, in resisting this control was that visits to his parents' cottage provided a welcome break from the Salvation Army hostel where he lived. As a result he agreed to comply with his parents' demands.

Failure

Losing control had disruptive repercussions in all areas of informants' lives, bringing devastating failures in its wake. Thus an overriding sense of failure was another element of the psychic pain that resulted from symptom exacerbation. Informants perceived that they had let themselves down and had failed to meet others' expectations of them.

Letting oneself down. Although informants struggled to overcome the consequences of their symptoms, they felt that they had let themselves down because they had experienced persistent difficulties in becoming the type of person they wanted to be. They had made plans to realize personal goals, taken steps to put their plans into action, and failed – multiple times. Jim spoke at length about this, because the night before the interview he had let himself down by taking gravol, which he said gives one a "cheap high," like "doing acid or something." He felt his repeated failures to reach the goals he set for himself was the reason for taking this gravol and described the following minor epiphany: "It hit me last night, I can't handle a job, I can't keep a girlfriend, I don't have a house."

Brian, a 35-year-old with a university degree in mathematics and physics, was living with his parents because he had been unable to establish an independent life for himself. He desperately wanted to have a permanent full-time job, but had discovered that "whenever I am put under a stressful situation,... I always seem to fall through." Brian contrasted this reality with his aspirations for himself: "It's important to feel that you can work regularly and steady like anyone else and do something to help the rest of the world."

Letting others down. For many informants, losing control of oneself and losing touch with reality had culminated in situations in which others had made it clear to them that they had failed to meet their expectations. A recurring phrase in respondents' narratives that captures this experience succinctly is "kicked out." Here are several examples.

Following his first psychotic episode John was removed from his job, but he persuaded his employers to give him another chance. He eventually regained their confidence and was sent by his company to a community college to study industrial mechanics. However, "I got psychotic again" and "I missed too much time and they kicked me out of school and I've been off work ever since."

Guy also described himself as having been "kicked out." In his case, it was from the army, where he was a corporal. He had been in the military for five years and loved it, but had to leave because he was charged too many times with being unreliable.

Brian, whose life was, more than any other informants, dominated by a sense of failing to meet others' expectations, believed he had been unsatisfactory at just about everything he had tried since leaving university. He was transferred from his first job, as a draughtsman, because

he made "enormous mistakes." He tried being a teacher's aide at a high school but wasn't rehired because, he was told, his mannerisms were a problem. He then enrolled in a teacher's training program but failed the student teaching component. Next he tried working in a grocery store, but once again was unsuccessful, because he would give the groceries to the wrong customer. He then got a job working as a janitor at McDonald's but after eight shifts was fired. Brian's efforts to establish relationships with women had met with the same lack of success. In summing up the cumulative epiphany that resulted from the last incident of being fired, he said, "It doesn't matter which way I interpret things, it means I'm a failure."

Loss

A third painful theme pervading informants' narratives was losing what mattered to them. This included both a general expectation of living a normal life and actual valued relationships or social roles. Again, these losses were often sustained as a result of episodes in which the informants lost control of themselves, and they contributed significantly to the chronic distress that informants experienced.

Losing a normal life. Informants' symptoms had seriously compromised their ability to live the kind of life they had grown up expecting for themselves. Before the onset of schizophrenia, they had not anticipated developing a mental illness. Indeed, they described themselves as having had the same negative attitudes about the mentally ill that were prevalent in their communities. They contrasted their circumstances with those of their brothers and sisters, who had the kinds of lives they believed would have been theirs had they not developed a mental illness. Even respondents who had begun to have serious problems with their mental health as teenagers expressed an acute sense of a normal life having eluded them. For example, Annette, whose symptoms first appeared when she was 17, felt enormous regret that her illness had prevented her from marrying and having children, which is what she said she had always wanted most in life. Jim also expressed feelings of loss: "My dreams are shattered. I wish I had a car, a job, a girlfriend, and everything, but I've been starting at the bottom for 10 years now and I'm not going anywhere, and that's the way I'm going to be for the rest of my life."

Losing roles and relationships. Respondents who had been able to establish relationships that mattered to them, find jobs that they liked, and gain material possessions that they cared about had been unable to hold on to them. Jeanine's most terrible loss was having to give up her

youngest son for adoption because she got "too sick to take care of him." She said, "He meant more to me than my other children because I had seven good years with him when I was really well." Dan, whose wife had divorced him six years earlier, still felt the grief: "I have no life. I still love my wife and I love my boy. I understand my wife – she's remarried, I accept that, you know, she's got her life – but I still love her." Losing what matters was most dramatic for Alex, who had been diagnosed as having schizophrenia only a year before being interviewed. A significant series of losses culminated in a major epiphany, a tumultuous turning point in his life when his illness became evident. He was fired from the job he had held for some 12 years and his wife divorced him and was awarded their house and custody of their two children. "Schizophrenia is a debilitating disease," said Alex, "it affects your lifestyle, and your being able to take care of your own, and your ability to deal with life situations. You're not able as you once were, as I once was."

Discussion

The evolution of self-monitoring for early signs of an imminent relapse was an introspective and solitary journey driven by the subjective experience of psychic pain. Elevations in the intensity of the distress that accompany symptoms of schizophrenia initiated this journey. At the beginning of the illness course informants sought relief from diverse sources, including illegal drugs, whenever their pain escalated. Sooner or later each informant's efforts to escape elevated distress resulted in a pattern in which he or she looked to the health-care system when symptoms worsened, and they found some temporary help in reducing distress in this way. The interaction between trying to diminish the pain felt when symptoms worsened and meeting with some success in doing so resulted in cumulative epiphanies in which informants began to consciously discriminate between a tolerable and an intolerable level of distress. Initially, then, their identification of signs of relapse represented an unspecific differentiation between heightened distress and low-level emotional discomfort. It resulted from a non-reflective reaction to intensifying pain. As problematic experiences with control, failure, and loss accumulated, a fear of relapsing crystallized in epiphanies in which informants began to anticipate that these painful sequellae would result from symptom exacerbation. Once this fear took hold, informants began to watch for increasingly subtle evidence of intensifying distress. They became conscious of minor increases in emotional discomfort brought on by everyday stressors. Moving in and out of these distressful situations refined their perceptions of symptomatic pain. As their

experience with fluctuations in distress accumulated, their ability to detect the component feelings and thoughts of increasing psychic pain became sharper. Thus, a fear of the painful consequences of relapse associated with a lack of control, failure, and loss generated self-surveillance for signs of deterioration.

This data suggest, then, that self-monitoring for symptom exacerbation was not the result of cognitive learning about the disease process; it was embedded in the illness experience of suffering. For informants, the overriding element in decompensation was increasing emotional distress, and the significant outcome of relapse was the pain associated with a lack of control, failure, and loss. As a result, a response to immediate suffering evolved into a response to anticipated suffering, and a general awareness of heightened distress evolved into an awareness of increasingly subtle components of distress.

Qualitative studies are idiographic and, therefore, inherently non-generalizable. Nonetheless, these findings could have implications for nurses helping clients avoid relapse by detecting early signs of decompensation. The data analysis suggests that self-monitoring for indicators of relapse involves skills that need to be uncovered by the person with schizophrenia rather than taught to them by others. By directing the person's subjective attention to the internal experience of increasing and decreasing distress, nurses may be able to promote this process by helping clients increase their existing level of awareness of signs of deterioration. As self-monitoring abilities appear to evolve over time, nurses should begin by assessing the degree of specificity of their clients' current level of distress awareness and the extent to which increasing distress is anticipated rather than simply reacted to. Using such an assessment as a starting point, they can foster development of self-monitoring abilities by encouraging clients to examine and identify fluctuations in subjective psychic discomfort at a somewhat greater degree of specificity.

In summary, although the public issue surrounding the symptoms of schizophrenia tends to be the inappropriate social behaviour that they entail, the personal trouble for people with the illness is the pain that accompanies the symptoms and results from them. It is important, therefore, that nursing interventions regarding self-management of the symptoms of schizophrenia be guided by an empathy for the alien, invisible, and disturbing distress that permeates the lived experience of this very difficult illness.

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Evaluating a Pediatric Pain Management Research Utilization Program

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Les innovations fondées sur la recherche en matière d'évaluation et de gestion de la douleur ne sont pas entièrement utilisées dans la pratique clinique des sciences infirmières. De ce fait, les enfants continuent de souffrir malgré des stratégies qui pourraient faire cesser ou réduire de façon importante leur douleur. Un programme pédagogique a été élaboré et mis en place afin d'intégrer les stratégies les plus révolutionnaires d'évaluation et de gestion de la douleur dans la pratique clinique des infirmières en pédiatrie. L'article procède à une évaluation du processus d'utilisation de la recherche au cours de l'élaboration et de la mise en place du programme qui comportait des cours théoriques, l'élaboration d'instruments pour évaluer la douleur et la documenter, des consultations suivies sur les stratégies de gestion de la douleur et la nomination d'une infirmière-ressource du service. Les résultats ont éclairé le processus par lequel le personnel infirmier d'un service en vint à connaître de nouvelles idées, à essayer ces mêmes idées dans leur pratique clinique, à réinventer certaines stratégies afin de mieux satisfaire à leurs besoins et, enfin, à adopter des innovations qui se sont révélées utiles à leur travail.

Research-based pain assessment and management innovations are not fully utilized in clinical nursing practice. Thus children continue to suffer despite strategies that could eliminate or significantly reduce their pain. An educational program was developed and implemented to integrate state-of-the-art pain assessment and management strategies into the clinical practice of pediatric nurses. This article reports on evaluation of the research utilization process during development and implementation of the program. The program included formal classes, development of instruments for pain assessment and documentation, ongoing consultation on pain management strategies, and designation of a unit-based staff nurse liaison. Findings illuminated the process through which nursing staff on one unit came to learn about new ideas, try those ideas in their clinical practice, re-invent certain strategies to better meet their needs, and, ultimately, to adopt innovations deemed helpful in their work.

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The proliferation of studies on pain over the past decade has advanced a scientific base for assessing and managing pain of various etiologies across the life span. The ultimate goal of research is to facilitate the transfer of scientific knowledge to clinical practice, thus improving patient outcomes (Briones & Bruya, 1990; Buckwalter, 1992). However, research utilization is a complex process, and disparity between research and practice is a common problem in any discipline (Ferrell, Grant, & Rhiner, 1990; Lindquist, Brauer, Lekander, & Foster, 1990). Kirchhoff (1982, 1991) suggests that research utilization lags are predictable when knowledge transfer is left to passive means like professional guidelines, journal articles, and scientific meetings. As Owen (1985, p. 182) notes, "Research studies only tell us what *is*. They do not tell us what to *do* or *how* to do it!" Although the results of pediatric pain research have been disseminated widely, researchers have documented a significant lag in the utilization of clinically applicable findings (Clarke et al., 1996; Foster & Hester, 1990), which is apparent in continued reports of underassessment and undertreatment (Rømsing, Møller-Sonnergaard, Hertel, & Rasmussen, 1996; Tesler, Wilkie, Holzemer, & Savedra, 1994). Thus, children continue to suffer despite innovations that could reduce their pain.

To facilitate the transfer of research-based knowledge for assessing and managing children's pain into the daily practice of pediatric nurses, we designed an educational program using guidelines commissioned by the U.S. Agency for Health Care Policy and Research, *Acute Pain Management in Infants, Children, and Adolescents: Operative and Medical Procedures* (American Pain Management Guideline Panel, 1992). This article reports on evaluation of the research utilization process of the educational program, which is part of a larger study entitled *Effects of a Policy for Managing Children's Pain* (Hester, Foster, Vojir, & Miller, 1992-1996). Two authors (S.H. and R.F.) assumed primary responsibility for the educational program and are referred to as the program educators.

Background and Significance

Integration of research findings into everyday clinical practice requires an active, focused, and systematic effort. In a comprehensive literature review of studies carried out in an attempt to improve physicians' prescribing behaviour in ambulatory settings, Soumerai, McLaughlin, and Avorn (1989) concluded that while educational materials are an important component of the process of change, they are of little value when used as the sole means of changing practice. Ford, Hunter, Diehr, Frelick, and Yates (1987) studied the influence of physician-developed, site-specific patient management guidelines in 17 community hospital

oncology programs. Guidelines were disseminated to all hospital departments and physicians and, in some cases, to physicians in the community. Copies of guidelines were attached to charts of all newly diagnosed cancer patients. Notably, the research concluded that production and dissemination of guidelines had little effect on clinical practice. Similar results were obtained by surveying hospitals and obstetricians across Ontario before and after dissemination of national consensus statement guidelines on Caesarean delivery (Lomas et al., 1989). While 87 to 94% of obstetricians were aware of the guidelines and 82 to 85% agreed with them, the rates of Caesarean delivery performed by these practitioners differed only slightly from pre-guideline data.

To have an impact on the problem of unresolved pain in hospitalized children, information about pain assessment and management must be transmitted to health-care providers, parents, and the children themselves. However, Manion (1993) notes, "Successful innovation is not magic or something that just happens when the synergy is right" (p. 41). Integrating research-based innovations to the advantage of patient care requires a special, systematic team effort from the researchers, the potential users (practitioners), administrators, and educators (Backer, 1988; Backer, Liberman, & Kuehnel, 1986; Bohannon & LeVeau, 1986; Chalmer, 1974; Edwards-Beckett, 1990; Ferrell et al., 1990; Ford et al., 1987; Hunt, 1981; Kirchhoff, 1982; Manion; Newman et al., 1989; Norr, 1994; Owen, 1985; Parboosingh, Lockyer, McDougall, & Chugh, 1984).

Theoretical Framework

"The challenge for research utilization is to understand the environment in which application takes place and to invent and carry out systematic strategies that increase the chances for successful innovation transfer" (Backer, 1988, p. 19). Rogers's (1995) innovation-decision process model, which has been developed and refined over the last 30 years, has provided a comprehensive framework for developing the educational program, integrating research-based pain assessment and management skills into practice, and evaluating the research utilization process. Rogers identifies integration as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 3). Theoretically, the innovation-decision process, an information-seeking and information-processing activity, progresses in five stages: knowledge, persuasion, decision, implementation, and confirmation.

Knowledge means exposure to the innovation. To avoid rejection or discontinuance of the innovation, three knowledge types are essential for development of the educational program: **awareness**-knowledge motivates individuals to seek "**how-to**"-knowledge, whereas **principles**-knowledge addresses the underlying essentials upon which the innovation is based.

Persuasion details the formation of an attitude toward the innovation. A favourable attitude is more likely to develop if the innovation displays (a) a relative advantage over current practice, (b) compatibility with existing values, past experiences, and needs of adopters, (c) simplicity, and (d) observable results. Research underscores the salience of these principles for integrating research-based pain management into practice. For example, clinicians value and use innovations that show a *relative advantage* in patient care (Gawlinski & Rasmussen, 1984; Lindquist et al., 1990; Lockyer, Parboosingh, McDougall, & Chugh, 1985; Newman et al., 1989; Norr, 1994). *Compatibility* with existing values and needs was a significant variant in nurses' decision to adopt research findings in their clinical practice (Champion & Leach, 1989). The role of compatibility has also been reflected in studies documenting the importance of administrative support and recognition for innovation (Ferrel, Grant, Ritchey, Rapchan, & Riviera, 1993; Funk, Champagne, Wiese, & Tornquist, 1991; Gawlinski & Rasmussen). Innovation-compatability information is sought by most individuals from those of their near-peers whose subjective opinion of the innovation is most convincing. Rogers (1995) describes the necessity for a unit liaison person to assist in development and implementation of the program.

Other research documents the importance of tools that are *simple* and clearly stated (Newman et al., 1989). The importance of *observable* results has been cited less frequently but may have contributed to the success of Ferrell and colleagues (1993) in implementing a program to prepare resource nurses in cancer pain management.

Decision encompasses activities that lead to adoption or rejection of the innovation. The role of the clinical pilot can be critical to decision-making (Edwards-Beckett, 1990; Horsley, Crane, Crabtree, & Wood, 1983; Lindquist et al., 1990; Soumerai & Avorn, 1990). In our own research, unit-based pilot projects substantially refined methods employed in our development and implementation of this educational program (Hester et al., 1995).

Implementation occurs as participants actually put the innovation to use. Some uncertainty remains throughout this stage, and *re-inven-*

tion is an important phenomenon. Through re-invention the innovation is modified to better meet the adopters' needs. Re-invention facilitates pride of ownership and thus increases the likelihood that an innovation will become a stable element of practice.

Confirmation involves seeking reinforcement for the decision to adopt the innovation. If participants encounter conflicting messages about the innovation at this stage, they may reverse their decision. This stage also highlights the time element. A lag usually exists between initial awareness and eventual adoption or rejection. The time required for adoption may be the most significant constraint to incorporating research findings into clinical practice (Newman et al., 1989).

The Educational Program

We developed the educational program to enhance awareness among pediatric nurses of state-of-the-art children's pain assessment and management practices and to provide support in the process of adapting and adopting effective pain-relief strategies. The following five principles of the American Pain Management Guideline Panel (1992) provided direction for educational content: (a) obtain a pain history from the child and/or parents at admission, (b) assess pain at regular intervals, (c) measure the child's pain using self-report and/or observation tools, (d) manage children's pain using both pharmacologic and non-drug strategies, and (e) document information about pain and intervention responses.

Prior to development of the current program, a pilot project was conducted to determine the clinical feasibility of selected pediatric pain assessment and documentation instruments (Hester et al., 1995). The findings of the pilot project provided direction for further selection, refinement, and/or development of tools. With assistance from the hospital nursing administrators, the following children's pain-related instruments were approved by the institution as permanent medical records:

Pain Experience History (PEH), with parallel forms for child and parent, asks open-ended questions to assess the child's understanding of the word "pain," previous experiences of pain, ways of communicating pain, and preferences for treatment (American Pain Management Panel, 1992; Hester & Barcus, 1986).

Poker Chip Tool (PCT), a well-validated instrument, measures children's self-report of pain on a 0-to-4 scale using four red plastic chips

referred to as "pieces of hurt" (Hester, 1979; Hester, Foster, & Kristensen, 1990).

Pain Observation Scale (POS), a nine-item instrument to assess behavioural cues associated with pain, was developed for this program. Items include nurses' impression of overall pain and anxiety, pain associated with movement, and facial indicators of discomfort. Internal consistency was supported by Cronbach's alphas of .79 to .87. Concurrent validity correlations with the PCT averaged $r = 0.47$.

Pain Flow Sheet (PFS), also developed for this program, incorporates assessment date and time, child and/or parent pain ratings, nurse's judgement of pain intensity, and interventions administered (see Figure 1). The PFS is unique in providing a record of non-pharmacologic interventions used by nurses or parents, information that is usually poorly documented (Clarke et al., 1996).

The entire program was planned to occur over an 11-month period; six months for the focused educational program and five months for assisted implementation follow-up. Program development incorporated essentials from Rogers's (1995) innovation-decision process stages.

Knowledge

Over an eight-week period, the program educators delivered awareness-knowledge and how-to-knowledge content areas through five formal 30-minute classes conducted on the unit for all staff nursing personnel. Principles-knowledge, derived from the 1992 Federal AHCPR Guidelines, was integrated into all content areas. Classes were videotaped for nurses unable to attend at the scheduled times. The first class incorporated use of the PEH and the PFS. Nurses were asked to practise using the PFS by recording their judgements of children's pain intensity. Other sections of the PFS were incorporated in succeeding weeks to correspond with educational session content. Staff were given two weeks to implement the information from each class before the next formal educational session.

The second class addressed the gate-control theory (Melzack & Wall, 1965), pain management principles, and use of non-pharmacologic strategies. The third class included pharmacologic pain management principles, emphasizing pharmacokinetics and pharmacodynamics of frequently used opioids and nonopioids. The fourth class focused on instructing the nurses to use the POS. The fifth class focused on pain assessment using the PCT, the program educator incorporating a role-

Figure 1 *Pain Flow Sheet*						
Time						
PCT-Child						
PCT Parent						
Child Pain Interview 1. Location? 2. Want?	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
Parent Pain Interview 1. Location? 2. Want?	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.	1. 2.
Nurse Judge 0-4						
Analgesic						
Comfort Hold/Rock Stroke/Soothe Be with	N P	N P	N P	N P	N P	N P
Environment Temperature/Light Noise/Smell	N P	N P	N P	N P	N P	N P
Teach Pain concepts Cognitive/Behaviour Medications	N P	N P	N P	N P	N P	N P
Physical Position/Splint Heat/Cold Massage/TENS	N P	N P	N P	N P	N P	N P
Cognitive/Behaviour Music/Imagery Distract/Relax	N P	N P	N P	N P	N P	N P
Comments						

playing scenario to demonstrate comprehensive assessment, management, and documentation of children's pain.

Our goals were to prepare staff to use the information with their patients and to develop pain assessment and management aids that would be helpful in their clinical practice. Program educators responsible for the "how-to" implementation were on-site three to four days a week to role-model desired behaviours, consult with nursing staff, encourage discussions about nurses' experiences with the program, and reinforce examples of desired behaviour. The formal classes were supplemented by ongoing education in the form of posters, distraction materials (e.g., toys, books, music), case-study handout, and literature.

Persuasion

The program educators recognized the value of recruiting a unit-based nurse to function as liaison. Staff nurses participating in the study had sometimes been reluctant to question investigators about pain assessment and management protocols or to openly express issues and concerns. They were much more likely to be candid when one of their peers had been appointed staff nurse liaison and could then relay the information to the educators.

Decision, Implementation, and Confirmation

During these stages, the staff had opportunities to try out all aspects of the program with assistance from the program educators. The program educators also encouraged staff to exercise their option to decide what was helpful and what was not helpful in their own clinical situations, with assistance in using knowledge and re-inventing the instrument formats.

Evaluation Design and Methodology

Research utilization involves the implementation and evaluation of a proposed change in practice, systematically evaluated over time (Buckwalter, 1992). An evaluation to determine a time-ordered sequence of events (process) is quite different from an experimental design that investigates the expected impact of the innovation (independent variable) on patient outcomes (dependent variable) (Norr, 1994; Rogers, 1995). Process evaluation, which is most needed in the initial implementation phases of a recently developed program, is designed to describe a program, its effects, and how it is implemented, and to assure that a plan

is executed – or, if not, determine why it failed (Green & Lewis, 1986; Ingersoll, Bazar, & Zentner, 1993; King, Morris, & FitzGibbon, 1987; Mohr, 1992; Rossi & Freeman, 1993). When establishing an innovation in clinical practice, "it is essential to know whether it continues to be effective and how it is integrated into and affects the health care setting. Negative impacts affecting factors such as work efficiency, morale, or costs, especially if unanticipated, can lead to the abandonment of an otherwise promising innovation" (Norr, p. 109). The program educators anticipated that variations in the process of adopting (or rejecting) the innovation would be affected by interactions among themselves, the nursing staff, and the clinical agency. Congruent with Green and Lewis's view of process evaluation, key aspects were identifying and understanding the systematic and predictable variations within the pediatric unit while monitoring the integrity of program implementation.

Participants

Participants included all nursing personnel on the unit. When the program was begun, the staff comprised 11 RNs, nine licensed practical nurses (LPNs), and six nursing assistants (NAs). However, during the 11-month period, a total of 39 staff members (16 RNs, 11 LPNs, 12 NAs) participated in all or part of the program. To facilitate process evaluation during periods of substantial staff turnover, program educators identified a core staff group consistently assigned to the unit during the six-month implementation period: 12 RNs, seven LPNs, and two NAs ($n = 21$), ranging in age from 20 to 47 years ($M = 30$ years, $SD = 9.1$). Most participants were white; one was Hispanic; one was African-American. All but one RN held a baccalaureate degree in nursing. Years of employment as a nurse ranged from one to 28 years ($M = 7$ years, $SD = 8.4$).

Data Sources

Data generation was multi-method and multi-source. The following sources provided process evaluation data:

Anecdotal data were essential to developing a more comprehensive view of the innovation-decision process in the participants' own words. Informal interviews with nursing staff and patients and participant observation on the pediatric unit were planned to take place three to four times weekly throughout the course of the program. The program educators' field notes documented each encounter on the unit. Soon after the structured educational sessions had been completed, staff were

invited to anonymously submit written comments, via an informal open-ended survey, concerning the feasibility of implementing the program. Near the end of the program, additional formal, in-depth, tape-recorded interviews were held with the program educators, staff nurse liaison, and nursing administrators.

Study forms adopted by the unit as part of the medical record (PEH, POS, PFS) were completed in duplicate. The carbon copy was returned to the program educators for identification of pain assessment and management activity trends.

Feasibility Rating Scale (FRS), developed for this program, was used to anonymously query participants about the utility of this program for clinical practice. Items addressed nurses' perceptions of preparation through the five formal classes, helpfulness of pain assessment and management aids, efficacy of the pain management program, and positive and negative aspects of the program. (See Figure 2.) Additionally, for each content area, respondents were asked whether they had been prepared in class or via videotape. Content validity was established by expert review.

Focus group interview (conducted by an interviewer not involved with the educational program) was conducted near the end of implementation. Three staff nurses, whose anonymity was guaranteed, were asked, "How did this research program change your practice?" Focus group interviewing is an especially beneficial way to elicit prevailing philosophies, group norms, perceptions, and receptivity to the innovation (Green & Lewis, 1986; Kingry, Tiedje, & Friedman, 1990; Krueger, 1988; Norr, 1994).

Data analysis

Analysis of data generated for this study sought to inductively verify Rogers's (1995) innovation-decision model. Beginning with the existing model, the data were searched for examples of how the model applied to integration of this innovative program. Anecdotal and focus-group data were transcribed to facilitate chronological, content, and thematic analysis. Carbon copies of the PEH, POS, and PFS were coded for frequency of use.

Frequency distributions with measures of central tendency and standard deviations were used to portray feasibility rating patterns. Cronbach's alpha reliabilities were computed to estimate internal consistency of the FRS and subscales (Preparation, Helpfulness, and Efficacy). Comparative statistics were used, when appropriate, to suggest trends.

Figure 2

Feasibility Rating Scale

How well did each *class/videotape* prepare you to use the information with your patients?

	Not at all Prepared	Somewhat Prepared	Moderately Prepared	Completely Prepared
1. Pain Experience History and Pain Flow Sheet	1	2	3	4
☐ Participated in class				
☐ Viewed videotape				
☐ Have not completed				
2. Non-Pharmacologic Strategies	1	2	3	4
☐ Participated in class				
☐ Viewed videotape				
☐ Have not completed				
3. Pharmacologic Strategies	1	2	3	4
☐ Participated in class				
☐ Viewed videotape				
☐ Have not completed				
4. Observation of pain indicators	1	2	3	4
☐ Participated in class				
☐ Viewed videotape				
☐ Have not completed				
5. Poker Chip Tool	1	2	3	4
☐ Participated in class				
☐ Viewed videotape				
☐ Have not completed				

To what extent will the following aids to pain *assessment* be helpful in your practice?

	Not Helpful	Somewhat Helpful	Moderately Helpful	Very Helpful	Don't Know Haven't Used
6. Pain Experience History	1	2	3	4	?
7. New Staff-Revised Pain Flow Sheet	1	2	3	4	?
8. Poker Chip Tool	1	2	3	4	?

Figure 2 (cont'd)
Feasibility Rating Scale

To what extent will the following aids to pain *management* be helpful in your practice?

	Not Helpful	Somewhat Helpful	Moderately Helpful	Very Helpful	Don't Know Haven't Used
9. Class on analgesic administration	1	2	3	4	?
10. Class on non-drug approaches (e.g., distraction)	1	2	3	4	?
11. Distraction materials left on unit (e.g., toys books, music, Walkman)	1	2	3	4	?
12. Booklets about pain (e.g., Guidelines for Acute Pain Management, EMLA)	1	2	3	4	?
13. What Would You Do? Quiz	1	2	3	4	?

14. What did you need that you didn't have?_____

15. Have you needed assistance with any of the aids to pain assessment or management? ☐ No ☐ Yes, with _____

16. Was help available when you needed it?
☐ Yes ☐ No. Why? _____
☐ Not applicable

	No Increase	Some Increase	Moderate Increase	Great Increase
17. To what extent do you think this educational program has increased your effectiveness in *assessing* children's pain?	1	2	3	4
18. To what extent do you think this educational program has increased your effectiveness in *managing* children's pain?	1	2	3	4

	Not at all Beneficial	Somewhat Beneficial	Moderately Beneficial	Completely Beneficial
19. To what extent do you think this educational program has been beneficial for the children on your unit?	1	2	3	4

Figure 2 (cont'd)

Feasibility Rating Scale

	No Fit	Some Fit	Moderate Fit	Complete Fit
20. To what extent do you think this educational program fits in with existing unit policies?	1	2	3	4
21. To what extent do you think this educational program fits in with existing ways in which nurses on your unit practise?	1	2	3	4

22. What was the *best* part of this educational program?

_____

23. What was the *hardest* part of this educational program?

_____

24. Do you have any additional comments?

_____

Evaluation adequacy criteria

Guba and Lincoln (1989) established four criteria (credibility, dependability, confirmability, and transferability) for judging the adequacy of a process evaluation. *Credibility* refers to adequate representation and accurate interpretation of the participants' experiences. Persistent observation and prolonged engagement were used to identify and assess salient characteristics of the process. By maintaining contact with the unit staff over 11 months, the program educators built trust with some staff members, the staff nurse liaison, and administrators, and became familiar with the contexts of the implementation experiences of staff members. To strengthen credibility, data from multiple sources were compared and integrated.

   Dependability meant that other program evaluators could reach similar conclusions from reading the analysis. *Confirmability* meant that the findings were determined by the participants and the study context, and not by the biases of the program educators (Guba & Lincoln, 1989). In follow-up interviews with the staff nurse liaison and selected administrators, the program educators clarified, validated, and elaborated their interpretations of staff experiences. The program educators also addressed dependability and confirmability by clearly documenting

their findings with data indicators so that others could reach comparable conclusions.

Transferability refers to the extent to which the findings have applicability in other contexts or with other participants. Although a process evaluation may be valid only for its participants, an accurate description of findings can predict processes and outcomes in similar situations.

Findings

Process evaluation focused on staff nurses' integration of the program into their pediatric practice and illuminated the conditions and experiences (both anticipated and unexpected) that affected their utilization of pain assessment and management strategies. Since findings support each of Rogers's (1995) five stages of innovation-decision, the theory provides a useful framework for presentation of findings.

Stage 1: Knowledge

Of the core group, 14 staff members (67%) (nine RNs, four LPNs, one NA) completed all five educational sessions; four (two RNs, two LPNs) finished four sessions; two (one RN, one LPN) completed three sessions; and the remaining NA finished two sessions. Fifteen core staff members (71%) completed the FRS. Reliabilities for the total scale and three subscales (Preparation, Helpfulness, and Efficacy) were strong (a = .94, .90, .84, and .93, respectively). On a four-point scale, with a higher number being a more positive response, the average Preparation subscale item mean was 3.0, or "moderately well prepared." Because staff members were expected to attend classes on their own time, often following a 12-hour shift, the majority obtained the information by viewing the videotaped sessions (range 60-87% per session). In comparison, independent group *t*-tests suggested no significant differences between ratings given by those who attended the class and those who viewed the videotape. However, given the small group numbers, results must be interpreted cautiously.

Anecdotal data further supported change, at this stage, in the innovation-decision process. For example, one nurse commented, "I've had an awful lot of nurses tell me they think [the program] has made them more aware and has brought more attention to pain." Staff also requested additional information about drugs (ketorolac, EMLA) and asked for case studies of pain problems. Themes emerging from comments on the FRS were increased knowledge and skills and increased understanding of the individualized nature of children's pain.

Stage 2: Persuasion

The program educators were surprised to encounter difficulties in communicating with unit staff. Many nurses on this unit were new baccalaureate nursing graduates who appeared intimidated by the older, more experienced educators. This made it difficult to impart information and elicit candid responses. Thus the staff nurse liaison, an enthusiastic young woman who was respected by her peers and by unit administrators, provided vital communication between staff and program educators, identified issues with program elements, and worked with educators to resolve problems as they developed.

Process evaluation data supported change at the level of Rogers's *persuasion* stage. On the FRS Helpfulness subscale, nurses were asked about the extent to which pain assessment and management aids made available through the program would be helpful to them in their practice. The average item mean on the Helpfulness subscale was 3.1 or "moderately helpful." The PEH received the highest rating for assessment aids ($M = 3.3$, $SD = .7$), while the distraction materials left on the unit ($M = 3.5$, $SD = .8$) and the class on analgesic medications ($M = 3.4$, $SD = .7$) received the highest ratings for pain management aids.

Further indicators of the process of change were provided by selected items on the FRS Efficacy subscale, which asked nurses the extent to which the program was beneficial for children on the unit and was compatible with existing unit policies and practices. The average Efficacy subscale item mean was 2.9, or "moderate," on four-point scales for each item. Ratings of the program's benefit for children were among the highest ($M = 2.9$, $SD = .9$). The benefit to children also emerged as a theme from written comments on the FRS.

Perceived benefit from pain management innovations appeared to be influenced in part by professional development. For example, one experienced nurse said she was familiar with the content of the education program because she had kept up with the literature. In contrast, unit administrators indicated that new graduates among the staff had benefited substantially.

Stage 3: Decision

This stage of the process was supported by evidence that staff were evaluating the innovation material and deciding which aspects were of value for their practice. Again, the FRS supplied important indicators. Selected items on the Efficacy subscale queried participants about the extent to which the educational program had increased their effective-

ness in assessing and managing children's pain: effectiveness in *managing* pain (*M* = 2.7, *SD* = 1.0) received the lowest rating, while effectiveness in *assessing* pain (*M* = 2.9, *SD* = .8) was among the highest.

Anecdotal data further supported change at this stage. For example, one nurse commented, "We're using a lot more distraction with the children and it really works." A unit administrator said, "I want you to know we're changing the PCA pump because of the questions you raised."

Stage 4: Implementation

During the implementation stage, staff nurses put the educational program to use on the unit. Evidence of use included carbon copies of the pain assessment and documentation forms (PEH, POS, and PFS); copies retrieved by the program educators provide only a conservative estimate of the forms used, since some copies may not have been recovered. Frequencies for use of the forms were compiled for the 15-week period immediately following the classes and for the 26-week period of the assisted implementation follow-up. Nurses' use of the tools in the 15 weeks following the classes was expected to be somewhat higher because of the educators' presence on the unit, whereas educators predicted that in the next 26-week period it would decline. Interestingly, overall usage of pain management forms increased by 77% in the follow-up period. Nurses used the forms with 58 children during the 15-week post-education period and with 178 children in the 26-week follow-up period. (Average census on this 25-bed pediatric unit was estimated to be 40-50%.) PEH usage increased 129% in the follow-up stage, whereas POS and PFS usage increased 7% and 16%, respectively.

Nurses' PEH and POS use surprised program educators, because these tools were among the most time-consuming aspects of the program. Apparently, the information obtained through these forms justified the time expenditure. For example, educators predicted that nurses who used the PEH would usually obtain data from the parent but omit the section requiring an interview with the child. However, PEH carbon copies revealed that nurses were seven times more likely to obtain historical data from both parent and child in the follow-up period than in the immediate post-education period. Nurses indicated the POS provided a systematic way to record observations they made routinely but rarely documented. Further, the tool was appropriate for preverbal and nonverbal children, a population for which assessment is much more difficult.

The length of time required to use the POS and PFS was addressed by staff nurses' re-invention of tool format. The staff nurse liaison and members of the unit staff collapsed categories within the POS and PFS to a new one-page flow sheet that included documentation of verbal report, behavioural assessment, and non-pharmacologic interventions. Other examples of re-invention were evident:

> I don't think we used the Poker Chip Tool as much as the educators would have liked. But I think we used that concept. I know one of the LPNs talked in report about a little post-op ortho patient and she had asked him how many "pieces" or how many "fingers" of pain he had. And so, we tried to do it that way; it wasn't so purely scientific – but we really tried to make it workable for us.

Stage 5: Confirmation

Change at the level of Rogers's (1995) confirmation stage became increasingly more evident in the year following completion of the educational program. Confirmation implies stability in the decision to adopt an innovation and can best be viewed through extended contact with the participants. One indicator of change at the level of confirmation is that unit staff continue to use the re-invented PFS. Additionally, two nurses who left the unit for positions in other locations requested permission from the educational team to implement the pain management program in their new locations. These are indicators of support for the stability of practice changes inspired by the educational program.

Discussion

The educational program to integrate into practice state-of-the-art children's pain assessment and management information produced changes that corresponded to a leading change theory (Rogers, 1995). Because few pain management intervention studies are recorded in the literature and fewer still incorporate a process evaluation component, this paper is among the first to document the manner in which nursing staff come to learn about, try out, and adopt or reject pain assessment and management innovations. Illumination of the change *process* can guide succeeding attempts to integrate pain management research into clinical practice.

This process evaluation highlighted several elements of change that were important to the success of the program. Designation of the pain assessment and documentation tools as official elements of the medical

record was a major impetus for change. The tool/record at once signi-fied administrative support for the educational program and implied administrative intent to produce lasting change. By providing for doc-umentation of assessment and management activities, each tool/record encouraged nurses to try the new strategies. Further, the fact that the tool/record eliminated the need for duplicate entries acknowledged nurses' concern for time constraints. A unit administrator said, "Having the forms might change practice even if it doesn't completely change attitudes." Notably, although the pain assessment, management, and documentation strategies of the educational program were integrated into care, staff nurses did not use the tools as frequently as the program educators had hoped.

The staff nurse liaison was a critical element in the process of change on this unit. Her enthusiasm for the project was infectious and her ready availability to staff encouraged them to experiment with all elements of the program. The designation of a staff nurse liaison com-municated to staff the program educators' concern for their support in this process and encouraged open and honest communication about their feelings, concerns, and ideas. Unexpectedly, the liaison herself became an agent for change, initiating re-invention of the PFS in response to staff concerns about the large amount of paperwork. Thus the liaison role significantly enhanced the strength of the innovation.

Another key element in the success of this process of change was the willingness of the educators to let staff modify valid and reliable assessment instruments to better meet unit needs. Without Rogers's (1995) theory to illuminate the value of re-invention, we might have been less flexible. Re-invention was a critical factor in staff decisions to adopt the principles of pain assessment and management.

Interestingly, changes occurred on this unit despite substantial organizational changes. The unit was undergoing an unusually high rate of staff turnover and, during this time, the pediatric residency program closed, affecting the number and diagnostic mix of patients. Lowered census threatened job security, and staff morale suffered as a result. Evidence of change in light of organizational upheaval presents a compelling invitation for additional context-laden studies.

The authors wish to emphasize the long-term nature of clinical change. Although time constraints forced termination of our formal process evaluation, ongoing contact with several staff members leads us to conclude that this change is still in progress.

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Acknowledgements

Designer's Corner

Evidence-Based Pain Management: The Need for Change

Dawn Carroll

Current Problems in the Management of Pain

Major advances in the management of pain, over the last 40 years, have been made through extensive research, rapid technological growth, and pharmacological advancements. Together, these factors have contributed to enhanced medical knowledge, the development of new theories, a better understanding of pain mechanisms, and the widespread introduction of new pain-relieving interventions.

Despite all these advances for pain, as with advances in other areas of health care, we have little knowledge about how different treatments compare in terms of overall effectiveness and safety. Treatment regimens are often based on prescriber preference, or on traditional, ritualistic, non-evidence-based practice, rather than on scientific fact. It has been estimated that only 15% of medical interventions currently in use are based on solid evidence (Smith, 1991). Textbooks, which are perceived as reliable sources of information, may be inaccurate and they quickly become outdated (Antman et al., 1992). It is difficult for clinicians to keep up with current research findings, because of the growing number of biomedical journals. There appear to be discrepancies between the recommendations of so-called experts and information from up-to-date systematic reviews, which suggests that the "experts" need improved access to up-to-date information (Milne & Chambers, 1993). With all this, it is hardly surprising that pain continues to be underestimated, inadequately assessed, and poorly controlled.

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The Importance of Systematic Reviews and Meta-Analyses

Evidence-based health care is based on the following principles: to do good rather than harm, to identify and critically appraise all of the existing evidence in an unbiased and systematic way, and to apply these findings to clinical practice (Sackett & Rosenberg, 1995).

Randomized controlled trials (RCTs) are now widely recognized to be the gold standard in assessing outcomes of health-care interventions (Chalmers, Dickenson, & Chalmers, 1992; Sackett, 1991), including treatment of pain. However, RCTs often have conflicting results, which causes confusion when research findings are applied to clinical practice. Adding to the conundrum, poor methodology and the use of inappropriate outcome assessments may result in either false positive or false negative results; similarly, studies of small sample size may be another important source of bias (Guyatt et al., 1986; Larson, Ellsworth, & Oas, 1993). Guidelines for assessing review articles and published reports are now available (Milne & Chambers, 1993; Oxman & Guyatt, 1988; Standards for Reporting of Trials Group, 1994).

Meta-analyses and systematic reviews may help clinicians to become better informed and to participate in decision-making processes – by combining the results of all the available RCTs on a given intervention to make statistical conclusions on their appropriateness, effectiveness, and safety. The main difference between a meta-analysis and a systematic review is that a meta-analysis uses statistical methods to combine data from individual trials, whereas a systematic review does not involve the use of formal statistical tests – either because it is inappropriate or because there is insufficient data in the published primary trials to make meta-analysis possible. The purpose of a systematic review is to gather existing research reports on a topic and summarize the results in a clear, unbiased, and systematic way. It should be noted that the quality of meta-analyses and systematic reviews is itself dependent on the quality of the primary studies (Oxman & Guyatt, 1988). Therefore in areas in which there are few studies, and in which primary studies are methodologically flawed or have small sample size and inappropriate outcome measures, it is unlikely that a high-quality systematic review with full meta-analysis will be possible. Written procedures and guidelines are now available to help health professionals undertake systematic reviews (see Cochrane Library under **Other Useful Sources of Information**).

The Review Process

The process of undertaking a systematic review is similar in approach to that of conducting a primary study, and the methods in a review must be equally rigorous. The actual undertaking of a systematic review should not be underestimated in terms of time, cost, and resources, and the review should be written up in such a way that the methods can be replicated by others. The review process is summarized in Table 1; some practical aspects of stages 1, 2, and 3 will be discussed in relation to systematic reviews in pain relief.

Table 1
Summary of the Review Process

1. Identify a clear and focused research question
- keep it as simple as possible – i.e., How effective is TENS in relieving post-surgical pain?

2. Identify a target sample
- with clear inclusion criteria – i.e., randomized controlled trials

3. Identify source of data
- electronic databases – i.e., MEDLINE, Cinahl, Pain Database, PsychLIT
- grey literature – i.e., unpublished data
- others – i.e., reference lists, textbooks
- identify all relevant papers by developing an adequate search strategy

4. Data analysis
- present data clearly, without misrepresentation or bias
- aims, design, sample size, treatment groups, methodological quality, main outcomes, results, conclusions
- statistical analysis (Is it possible? Is it appropriate? Which method?)

5. Conclusions
- make recommendations based on findings
- implications for patient, for clinical practice, for future research

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Identifying Relevant Trials for Systematic Reviews in Pain Relief

Identification of all potential trials is not always straightforward and can be costly in terms of time and money (Chalmers et al., 1992). The effort that must go into the initial search, which will provide the data for a review, should not be underestimated.

Developing a research question. The purpose of a systematic review is to study all of the relevant trials in an attempt to answer a specific question. It is essential that the researcher have a clear and focused research question before attempting to search the literature, as this will influence the search strategy. If the question is too broad, the researcher might be overwhelmed with information; if many relevant papers are found, it may be worth narrowing the question. For example, "How effective is TENS?" may identify many RCTs; a more focused question would be "How effective is TENS during childbirth?" which would identify far fewer reports and concentrate on one clinical setting in which TENS is used. A preliminary literature search is always important once the research question has been decided, to prevent duplication of work. The Cochrane Collaboration have a register of systematic reviews that are either completed or in progress (see **Other Useful Sources of Information**).

Finding information. The development of electronic databases such as MEDLINE has made it considerably easier to identify published reports of clinical trials, but such databases do have limitations. It may be necessary for the investigator to use a number of sources of information to obtain relevant trials for a review – for example, reference lists in scientific publications and textbooks. Not all biomedical journals are indexed on electronic databases. Inadequate indexing in MEDLINE is a recognized problem, which means that by relying on Mesh Terms the researcher may miss important and relevant trials. Identifying relevant trials from an electronic database requires considerable skill and careful selection of appropriate Mesh Terms and free text words (Jadad & McQuay, 1993). To maximize yield, the investigator is advised to consult with a trained librarian before proceeding with complex searches. It is not always possible to determine from a MEDLINE citation whether the report is of an RCT until a hard copy is obtained. Other problems associated with electronic searches have been discussed by Chalmers et al., 1992; Dickerson, Scherer, & Lefebre, 1994; and Duley, 1996.

It is important that the appropriate electronic database be used, in order to detect pertinent trials, and it may be helpful to search more than one database. The Cochrane Database of Randomised Controlled Trials is a useful source of information and may be available through academic libraries; a database of RCTs in pain relief (Jadad, Carroll, Moore, & McQuay, in press) has recently been added to the Cochrane Database of RCTs.

The pain database, which was developed from an extensive MEDLINE search and a manual search of more than 40 biomedical journals, now contains citations for over 14,000 RCTs for pain interventions. The pain database, which is continually updated, was developed to prevent duplication of effort when undertaking systematic reviews in pain relief, recognizing the difficulties of identifying relevant trials. Table 2 outlines the broad structure of the pain database and the many studies in acute, chronic, and cancer pain and the spread of different classes of pain interventions. A sister database is currently being developed from the psychological literature to complement the main database, but it is not likely to be completed in the immediate future.

Table 2
*Pain Database of Randomized Controlled Trials (1950-1994)**

Broad Class of Intervention	Acute	Chronic	Cancer	Total (%)
Complementary	112	223	10	345 (2)
Invasive	1697	336	34	2067 (14)
Pharmacological	5390	4978	337	10705 (75)
Physical	402	501	36	939 (7)
Psychological	100	191	10	301 (2)
Total				14,357

*Numbers may not always add up, as trials may come under more than one category.

The Future

Systematic reviews and meta-analyses will likely play an important role in the future management of pain. Some systematic reviews in pain relief have been published; others are underway. A recent literature search by the Oxford Pain Research Group identified nearly 200 published systematic reviews or meta-analyses for pain interventions (author's unpublished data), but many more need to be done. Indeed some of these reviews must be updated if they are to continue to be useful, relevant, and informative. Updating and maintaining reviews is an important aspect of evidence-based health care. It is hoped that systematic reviews will provide information for evidence-based clinical guidelines and direction for research. Critical and systematic appraisal of research can only help improve existing research methods and trial design, as well as develop standardized outcome measures for pain, so that it will be easier to combine and compare data from different trials.

For patients in pain it is essential that safe and effective interventions be identified and made widely available, and that ineffective interventions be rejected. New and unproven interventions need to be adequately assessed. If treatments have potential risks, then patients should be informed about them, and they should be involved in decisions on evidence-based treatment options. As resources for health care become increasingly scarce, it is no longer acceptable for ritualistic practices to continue without formal evaluation and justification. It is likely that purchasing decisions will be influenced by the results of systematic reviews in the future; as the public becomes better informed and is encouraged to take a more active role in health care, all health-care professionals will need to be more accountable to patients and be able to justify their clinical decisions.

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Other Useful Sources of Information

Canadian Cochrane Centre, Health Information Research Unit, McMaster University Medical Centre, 1200 Main St. West, Hamilton, Ontario L8N 3ZN. E-mail address: cochrane@mcmaster.ca. Web site home page: http://hiru.mcmaster.ca/cochrane/

Chalmers, I., & Altman, D.G. (1995). *Systematic reviews.* London: BMJ Publishing.

Cochrane Library (containing four databases of reviews and RCTs), available from BMJ Publishing Group, P.O. Box 295, London WCIH 9TE, UK.

Oxford Pain Research Group web site home page: http://www.jr2.ox.ac.uk.80/Bandolier/painres/painres.html

For details on systematic reviews in pain relief or the pain database, please contact the author: Dawn Carroll, Oxford Pain Research Group, Pain Research Unit, Churchill Hopsital, Headington, Oxford OX3 7LJ. E-mail address: dawn.carroll@pru.ox.ac.uk

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L'informatisation en soins infirmiers : À la recherche d'un idéal !

Guy Bélanger et Raymond Grenier

The computerized systems that are currently available are frequently incompatible with the specific information needs of nursing practice (Grassert, 1990). It is not currently possible to analyze the computerization requirements of nursing practice, since we do not know towards what ideal situation the process of computerizing nursing should be evolving. This makes it impossible to measure the gap between the status quo and the ideal situation. This methodological study described the desired situation by identifying 43 criteria for ideal management procedures and the handling of data needed in nursing practice. Criteria were validated using the DELPHI technique on a non-probablist sampling of 22 nurses who had developed some expertise in computerization in nursing. The study paves the way for conducting a needs assessment, then measuring the capacity of current systems to meet specific needs in terms of management and handling of nursing data.

Les systèmes informatisés actuels sont souvent incompatibles avec les besoins spécifiques d'information de la pratique infirmière (Gassert, 1990). Actuellement, il est impossible d'analyser les besoins d'informatisation de la pratique infirmière puisque la situation idéale vers laquelle devrait évoluer le processus d'informatisation des soins infirmiers nous est inconnue. De ce fait, l'écart existant entre la situation actuelle et la situation idéale ne peut être mesuré. Cette étude méthodologique a permis de décrire la situation souhaitée en identifiant 43 critères précisant les processus idéaux de gestion et de traitement des données nécessaires à la pratique infirmière. Ces critères ont été validés grâce à l'utilisation de la technique DELPHI auprès d'un échantillon non probabiliste de 22 infirmières et infirmiers ayant développé une expertise dans l'informatisation en soins infirmiers. Cette étude rend possible la conduite d'une analyse des besoins et par la suite, la mesure de la capacité des systèmes actuels à répondre aux besoins spécifiques de gestion et de traitement des données infirmières.

Problématique

De plus en plus, l'ordinateur s'implante dans les milieux cliniques et oblige la pratique infirmière à s'adapter à l'ère des nouvelles technologies de l'information. Cependant, les systèmes informatiques actuels ne peuvent prétendre répondre aux besoins d'information de la pratique infirmière puisque ces besoins n'ont pas encore été clairement identifiés. Le concept de besoin, étant défini comme l'écart existant entre la situation actuelle et la situation idéale (Kaufman et English, 1979)

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implique la nécessité de préciser cet «idéal» à atteindre. Or, dans l'état actuel des connaissances en sciences infirmières, il s'avère difficile, voire impossible, de mener à terme une analyse des besoins d'information de la pratique infirmière puisque la situation idéale, vers laquelle devrait évoluer le support informatique, nous est inconnue. La conception et le développement d'un système informatisé basé uniquement sur l'analyse de la pratique actuelle ne permettent pas de préciser les besoins d'information en soins infirmiers et, selon Davis, Olson, Ajenstat et Peaucelle (1986), ne permet pas de percevoir les évolutions souhaitables dans le système d'information.

La méconnaissance des besoins spécifiques d'information de la pratique infirmière donne libre cours à une interprétation divergente des effets de l'informatisation de la pratique infirmière. D'une part, à la suite de la conception, du développement et de l'implantation du Plan d'intervention multidisciplinaire informatisé (PIMDI), Fontaine (1993) note que «Les succès obtenus à ce jour confirment que l'utilisation de l'informatique appliquée à la transmission et à la conservation des données concernant les soins infirmiers entraîne des résultats positifs sur tous les plans» (p. 75) et Bossé et Fillion (1995) soutiennent que l'informatisation de la pratique infirmière a pour effet d'augmenter l'autonomie de l'infirmière et de l'infirmier et que «les infirmières se sentent valorisées par l'accroissement de leurs responsabilités en ce qui concerne la planification des soins, le jugement diagnostique, l'enseignement au client, l'évaluation de la qualité des soins et la recherche» (p. 27). D'autre part, les résultats d'une étude qualitative conduite par Harris (1990) suggèrent que les plans de soins informatisés contribuent à la diminution de l'autonomie professionnelle et de l'expertise chez l'infirmière et l'infirmier ainsi qu'à la diminution de l'individualisation des soins infirmiers. Deux facteurs ont été identifiés pour expliquer la diminution de l'autonomie professionnelle : (1) les gestionnaires exercent un contrôle accru en raison de la disponibilité des données que procure ces systèmes et (2) l'inflexibilité de ces systèmes oblige l'infirmière ou l'infirmier à s'adapter à la façon dont l'ordinateur est programmé pour effectuer les tâches relatives à l'élaboration du plan de soins. La perception d'une diminution de l'expertise professionnelle s'explique par le fait qu'il est plus rapide, plus facile et plus pratique d'utiliser un plan de soins standard prédéfini dans le système que d'en élaborer un nouveau. Cette manière de procéder n'encourage pas le processus de réflexion chez l'infirmière ou l'infirmier. Enfin, une menace à l'individualisation des soins est perçue puisque les choix proposés par ces systèmes sont trop généraux pour traduire les observations des infirmières et infirmiers, qui doivent constamment opter pour le «deuxième meilleur choix». Pour cette auteure, il est important que

les infirmières et infirmiers prennent conscience de l'effet macro-scopique de l'utilisation de ces systèmes sur la reconnaissance même des soins infirmiers en tant que profession.

La conception même des systèmes informatisés actuels semble problématique. McLaughlin, Taylor, Bliss-Holtz, Sayers et Nickle (1990) précisent que les systèmes informatisés ont souvent été développés selon des modèles administratifs, médicaux ou éclectiques. De plus, ces auteures soutiennent que concevoir un système d'information basé sur la démarche systématique en tant que structure générale ne permet pas d'obtenir toute l'information des données collectées puisque le système informatisé n'établit pas nécessairement de liens entre la démarche sys-tématique et un modèle conceptuel en soins infirmiers. Zielstorff, Hudgings et Grobe (1993) et McLaughlin et al. (1990) critiquent la con-ception des systèmes basés sur les documents à produire (*report-driven*) ou sur les activités à effectuer (*process-driven*) puisque ces systèmes ne permettent pas d'assurer la gestion des données (*data-driven*) néces-saires à la pratique infirmière. Adam (1991) allègue que le fait de développer un système informatique selon une perspective empruntée ou incomplète renforcera et perpétuera cette vision empruntée ou incomplète de la pratique infirmière. Et enfin, Ford (1990) nous prévient que, dans la pratique, l'ordinateur risque de changer notre conception des soins infirmiers.

La discipline infirmière ne dispose pas encore des connaissances nécessaires permettant de préciser les besoins d'information de la pra-tique infirmière, ni des instruments permettant d'évaluer la capacité des systèmes existants à répondre à ces besoins. Pour ces raisons, les infir-mières et infirmiers, se voient contraints d'adapter leur pratique à des systèmes qui sont souvent incompatibles avec leurs besoins spécifiques d'information (Gassert, 1990)

Recension des écrits

En 1977, une première conférence s'est tenue aux États-Unis dans le but d'explorer les perspectives de recherche dans le domaine des systèmes d'information en soins infirmiers (Moritz, 1990). Des besoins spéci-fiques de recherche ont été identifiés sur le plan de la systématisation et de l'informatisation des données nécessaires à la pratique infirmière, ainsi que sur le plan de l'évaluation des systèmes d'information (Werley et Grier, 1981). En 1983, un groupe d'étude sur les systèmes d'information en soins infirmiers soutenait que les fondements de la pratique infirmière sont, en partie, basés sur l'enregistrement des données relatives à ses activités et que les infirmières et infirmiers n'avaient pas encore organisé et utilisé cette documentation exhaustive

de façon à faire avancer le savoir de la discipline, à développer la pratique infirmière, ou encore à améliorer les soins prodigués aux patients. L'informatisation d'un système d'information en soins infirmiers avait été reconnue comme un besoin urgent puisqu'un tel système offrirait l'opportunité d'identifier, de manipuler, de retrouver et d'utiliser les données de façon à permettre l'atteinte de ces objectifs (Study Group on Nursing Information Systems, 1983).

Fondé en 1986, le National Center for Nursing Research (NCNR) a soutenu plusieurs études exploratoires dans le domaine des systèmes d'information. Cet organisme a identifié l'étude des systèmes d'information comme un domaine prioritaire de recherche en soins infirmiers (Moritz, 1990). De même, un comité d'experts, mis sur pied par le NCNR, a recommandé que soit décrite la situation idéale relative aux systèmes d'information en soins infirmiers, que la situation actuelle soit évaluée et critiquée, et enfin, que soient identifiées les recherches nécessaires qui permettraient d'évoluer vers la situation idéale. Malgré ces recommandations, nous ne disposons toujours pas de données permettant de préciser cet idéal.

En 1988, l'American Nurses Association a identifié et publié des critères de conception applicables aux systèmes informatisés conçus pour soutenir l'infirmière ou l'infirmier dans l'application de la démarche systématique (Zielstorff, McHugh et Clinton, 1988). Ces critères ont été élaborés dans le but de définir les qualités techniques minimales que devrait posséder un tel système informatisé. McLaughlin et al. (1990) ont référé à ces critères afin d'explorer les liens entre les aspects théoriques en sciences infirmières et les systèmes d'information. Ces auteures font remarquer que concevoir un système d'information uniquement sur la démarche systématique ne permet pas d'obtenir toute l'information des données recueillies. C'est à partir d'un modèle conceptuel en soins infirmiers que les données prennent une signification particulière et que nous pouvons établir une relation entre ces données dans le but de transformer ces relations en savoir infirmier. À partir du modèle conceptuel d'Orem, ces auteures ont développé un modèle du traitement de l'information destiné à être traduit ultérieurement dans la conception d'un système informatisé. L'intérêt de leur étude portait sur la différence perçue entre la réalité de la pratique infirmière et ce que cette pratique devrait ou pourrait être. Ces auteures soulignent que la façon dont l'information en soins infirmiers est documentée, gérée et emmagasinée constitue un facteur contributif au maintien de cette dichotomie entre la pratique actuelle et la pratique qui «devrait être» (situation actuelle vs situation idéale).

De plus, sur le plan de la gestion des soins infirmiers, le besoin d'établir une communication (interface) entre des outils de gestion et le plan de soins infirmiers est clairement établi. Il s'agit, par exemple, de la mesure de la charge de travail, de la mesure de l'intensité des soins infirmiers, de l'évaluation des coûts imputables aux soins infirmiers sur la base des DRG (*diagnosis related groups*), ou encore, de l'implantation du suivi systématique.

Sicotte, Tilquin et Valois (1992) ont analysé l'expérience québécoise en matière de conception, de développement et d'utilisation des systèmes d'information dans les établissements de santé. À la suite de cette analyse, ces auteurs insistent sur l'importance de concevoir des systèmes qui répondent d'abord aux besoins opérationnels des professionnelles et professionnels puisque la validité des données fournies par le niveau opérationnel est déterminante de l'usage que peuvent en faire les gestionnaires sur les plans tactique et stratégique.

Malgré l'évolution rapide de la technologie et les nombreux développements informatiques depuis la reconnaissance de l'informatisation en soins infirmiers comme domaine d'étude spécifique à la discipline infirmière, il importe de préciser que l'identification des besoins d'information de la pratique infirmière demeure toujours une priorité inscrite à l'agenda du NCNR pour la période 1992-1996 (NCNR, 1993). Cette priorité est également reconnue par l'American Nurses Association (1994) et par la National League for Nursing (Zielstorff et al., 1993). De plus, Zielstorff et al. (1993), McLaughlin et al. (1990) et le NCNR (1993) démontrent l'importance et la nécessité d'adopter un nouveau paradigme dans la conception de ces systèmes : concevoir un système d'information basé sur les données (*data-driven*) nécessaires à la pratique infirmière permettant, de ce fait, d'augmenter en qualité et en quantité les informations que nous pourrons tirer de ces données et ce, dans le but ultime d'optimiser le développement d'un savoir spécifique à la discipline infirmière.

Cadre conceptuel

En 1989, Graves et Corcoran ont développé un cadre dans le but de conceptualiser le processus de l'informatisation en soins infirmiers. Il semble que cette perspective soit maintenant devenue la référence conceptuelle pour l'informatisation en soins infirmiers. La plupart des écrits récents s'en inspirent (ANA, 1994 ; McLaughlin et al., 1990 ; NCNR, 1993 ; Zielstorff et al., 1993). Cette perspective (voir la figure 1) repose sur la taxinomie et sur les définitions des concepts centraux de « données », d'« information » et de « savoir » proposées par Blum (1986). Chacun de ces concepts représente un niveau informationnel parti-

culier. Le concept de « donnée » représente une entité discrète, décrite objectivement, sans interprétation. Il s'agit donc d'une donnée brute (*rough data*) collectée par une infirmière ou un infirmier dans l'exercice de ses fonctions professionnelles. Le concept d'« information » se traduit par une interprétation, une organisation et une structuration des données. Enfin, le concept de « savoir » consiste en une synthèse de l'information permettant d'identifier et de formaliser les interrelations informationnelles.

Figure 1
Adaptation du cadre conceptuel de Graves et Corcoran (1989)

L'informatisation en soins infirmiers

Gestion	Processus de gestion et de traitement	Traitement
Collecter Agréger Organiser Déplacer Représenter		Prise de décision clinique Recherche

Donnée	→	Information	→	Savoir
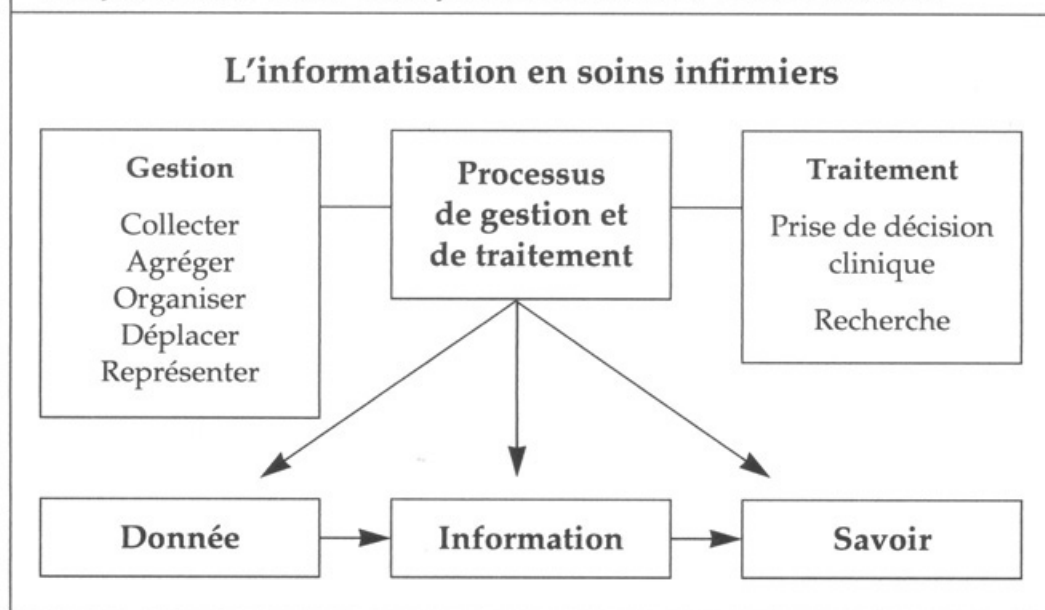
Des processus de « gestion » et de « traitement » s'appliquent à chacun des niveaux informationnels, c'est-à-dire aux données, à l'information et au savoir. Ces processus de gestion et de traitement peuvent être considérés comme les composantes fonctionnelles de l'informatique. Le processus de gestion représente l'habilité fonctionnelle à collecter, agréger, organiser, déplacer et représenter les données, l'information et le savoir de façon économique et efficiente, de sorte que ces informations (au sens large du terme) soient utiles aux usagers du système. Le processus de traitement réfère au processus de prise de décision clinique par les infirmières et infirmiers, au processus de découverte et de validation du savoir par les chercheuses et chercheurs, ainsi qu'au processus d'élaboration des théories par les théoriciennes et les théoriciens. Le traitement permet donc une transformation des données ou des informations qui permet de générer un état plus complexe d'organisation ou de signification. Une progression est perçue

dans la transformation de données en information et dans la transformation de l'information en savoir.

Par cette étude méthodologique, nous avons cherché à identifier la situation idéale quant aux processus de gestion et de traitement appliqués au concept de donnée. Le but poursuivi consistait à identifier et à valider les critères permettant de préciser la situation idéale vers laquelle devrait évoluer le support informatisé des processus de gestion et de traitement des données. La question de recherche était la suivante : Quels sont, selon l'avis d'infirmières et d'infirmiers ayant développé une expertise au niveau de l'informatisation de la pratique infirmière, les critères reconnus suffisamment valides en termes de clarté, de pertinence et d'importance, pour préciser, d'une part, les processus idéaux de gestion des données, soit (a) la collecte des données, (b) l'agrégation des données, (c) l'organisation des données, (d) le déplacement des données et (e) la représentation des données, et d'autre part, les processus idéaux de traitement des données permettant de supporter (a) la prise de décision clinique et (b) la recherche ?

Méthode

Une recension des écrits a permis d'énoncer, de façon aussi exhaustive que possible, les critères qui ont servi à la construction du premier questionnaire destiné à recueillir les opinions des expertes et des experts. La validité nominale du questionnaire a été vérifiée auprès d'étudiantes et d'étudiants à la maîtrise en sciences infirmières. À titre de juges, ces personnes devaient se prononcer sur la clarté du contenu et de la forme du document, ainsi que sur la clarté, la pertinence et l'importance de chacun des critères énoncés. L'unanimité des juges a été obtenue après trois modifications successives du questionnaire.

À l'aide de trois échelles de type LIKERT, le questionnaire permettait de mesurer la clarté, la pertinence et l'importance de chacun des énoncés de critères proposés. Les expertes et les experts devaient se prononcer sur la clarté des énoncés en utilisant l'un des choix suivants : Clair – Légèrement ambigu – Ambigu – Incompréhensible. Le degré de pertinence était évalué par les catégories suivantes : Très pertinent – Pertinent – Peu pertinent – Non pertinent. Enfin, le degré d'importance a été vérifié à l'aide des choix suivants : Très important – Important – Peu important – Non important. Dans le cas où le critère évalué n'avait pas été jugé clair, très pertinent ou pertinent, ou encore, très important ou important, l'experte ou l'expert pouvait indiquer les raisons de son choix et suggérer une nouvelle formulation du critère à l'étude. Enfin, le questionnaire permettait de proposer d'autres énoncés de critères.

Compte tenu du fait qu'il existe peu d'expertes et d'experts dans le domaine de l'informatisation en soins infirmiers, nous avons opté pour une méthode d'échantillonnage de convenance dite non probabiliste, soit la méthode «boule de neige» décrite par Polith et Hungler (1991). Des appels téléphoniques ont été logés auprès d'expertes et d'experts ayant publié un texte scientifique traitant de l'informatisation de la pratique infirmière. Ces expertes et experts ont été invités à suggérer le nom d'autres infirmières ou infirmiers répondant à la définition opérationnelle du terme expert. Ce processus a permis d'obtenir la participation de 25 expertes et experts à la présente étude. Le phénomène d'attrition s'est traduit par la perte de trois sujets.

Nous avons retenu deux variables externes qui risquaient d'affecter la validité des critères identifiés. Il s'agit du titre d'emploi ou la fonction occupée par l'experte ou l'expert et de son expérience avec un système informatisé. Notre échantillon s'avère hétérogène en fonction du titre d'emploi et également en regard de l'expérience de chaque experte ou expert sur un système informatisé. Cependant, la majorité des expertes et experts recrutés occupent des postes cadres dans les établissements hospitaliers.

La consultation des expertes et des experts a été effectuée selon la technique DELPHI, qui consiste à répéter les consultations en incluant les résultats des consultations précédentes, afin de permettre que l'opinion de l'ensemble des expertes et experts converge vers le plus haut niveau de consensus possible. Le cheminement de notre étude a nécessité trois consultations. Au retour de chaque questionnaire, le niveau de consensus était calculé pour les caractéristiques clarté, pertinence et importance de chacun des critères énoncés. Pour être retenu, un critère devait avoir été jugé clair, très pertinent ou pertinent et très important ou important par au moins 85 % des expertes et experts consultés. De même, la validité de contenu a été assurée en soumettant toutes les modifications, les regroupements et les reformulations des énoncés de critère à l'approbation d'au moins 85 % des expertes et experts consultés.

Résultats

Cette étude a permis d'identifier et de valider 43 critères précisant les processus idéaux de gestion et de traitement informatisés des données nécessaires à la pratique infirmière. Le tableau 1 présente les niveaux de consensus obtenus avec les critères associés au processus de gestion et le tableau 2 présente les niveaux de consensus obtenus avec les critères associés au processus de traitement.

Tableau 1
Niveau de consensus obtenu pour les critères du processus de gestion (n = 22)

Processus	Fonction	Dimension traduite par le critère	Niveau de consensus obtenu[1]		
			Clarté	Pertinence	Importance
Gestion	Collecter	Rapidité de la saisie des données	95,5 %	90,9 %	90,9 %
		Gestion de toute donnée nécessaire à la pratique	100,0 %	100,0 %	100,0 %
		Personnalisation des observations	86,4 %	100,0 %	100,0 %
		Ajout de données	90,5 %	95,5 %	95,5 %
		Modification de données	95,2 %	85,0 %	85,0 %
		Élimination de données	95,5 %	95,2 %	90,5 %
		Détection des valeurs inacceptables	85,7 %	95,5 %	90,9 %
		Discrimination des valeurs normales qui diffèrent en fonction du développement de la personne	86,4 %	90,9 %	86,4 %
		Détection des associations aberrantes de données (ex. : homme primipare)	100,0 %	90,9 %	90,9 %
		Présentation sélective des écrans de saisie	100,0 %	90,9 %	90,9 %
		Mise à jour des données aussi souvent que nécessaire	100,0 %	95,2 %	100,0 %
		Identification de l'auteur de la saisie de la donnée	100,0 %	95,2 %	100,0 %
		Respect des lois et règlements en vigueur	95,2 %	100,0 %	100,0 %

1. Ces résultats réfèrent au libellé du critère original et non à la dimension présentée dans ce tableau.

Tableau 1 (suite)
Niveau de consensus obtenu pour les critères du processus de gestion (n = 22)

Processus	Fonction	Dimension traduite par le critère	Niveau de consensus obtenu[1]		
			Clarté	Pertinence	Importance
Gestion	Agréger	Intégration des données entre professionnels	90,5 %	100,0 %	100,0 %
		Établissement de liens entre rapports et formulaires	90,9 %	100,0 %	100,0 %
		Établissement de liens avec d'autres systèmes informatisés	95,2 %	100,0 %	100,0 %
		Diffusion et consultation de politiques, de protocoles…	95,2 %	100,0 %	100,0 %
		Élimination de la duplication dans la saisie de données	95,0 %	95,0 %	95,0 %
		Modification de la disposition et de l'ordre des données	95,2 %	95,0 %	95,0 %
	Organiser	Saisie de données personnalisée en fonction du service clinique	86,4 %	95,5 %	100,0 %
	Déplacer	Communication électronique entre établissements	86,4 %	95,5 %	100,0 %
		Sécurité dans l'épuration de données	95,2 %	90,9 %	100,0 %
		Respect de la politique d'archivage d'un établissement	95,5 %	90,9 %	100,0 %
		Fonctions de courrier électronique	86,4 %	90,9 %	86,4 %
	Représenter	Présentation des données sous forme graphique	85,7 %	100,0 %	100,0 %
		Mode uniforme de présentation des données	85,7 %	100,0 %	100,0 %
		Rapidité de la recherche des données	95,2 %	100,0 %	100,0 %

1. Ces résultats réfèrent au libellé du critère original et non à la dimension présentée dans ce tableau.

Tableau 2
Niveau de consensus obtenu pour les critères du processus de traitement (n = 22)

Processus	Fonction	Dimension traduite par le critère	Niveau de consensus obtenu[1]		
			Clarté	Pertinence	Importance
Traitement	Prise de décision	Association de valeurs «limites» à chaque donnée	90,9 %	86,4 %	100,0 %
		Détection et signalement des valeurs anormales	100,0 %	95,5 %	95,5 %
		Opération en temps réel	95,2 %	90,0 %	90,0 %
		Présentation de l'évolution d'une donnée en fonction d'autres paramètres (ex. : mobilité vs exercices)	86,4 %	95,2 %	85,0 %
		Génération d'un profil infirmier de l'état de la personne	85,7 %	85,0 %	85,0 %
		Mesure de l'évolution de l'état de la personne par la comparaison du profil infirmier actuel avec un profil antérieur	90,5 %	95,2 %	90,5 %
		Interrogation conviviale de la base de données	90,9 %	86,4 %	90,5 %
		Alerte lorsqu'une donnée atteint ou dépasse un seuil limite	90,5 %	95,2 %	95,2 %
		Définition claire des données manipulées	90,5 %	95,2 %	95,2 %
		Définition claire des unités de mesure	90,9 %	100,0 %	100,0 %
	Recherche	Accès à l'infirmière de la définition et des unités de mesure des données	90,9 %	90,9 %	90,9 %
		Génération exacte des données collectées	90,9 %	90,9 %	90,9 %
		Disponibilité des données à des fins de recherche	95,5 %	100,0 %	100,0 %
		Calculs statistiques sur les données collectées	90,5 %	95,0 %	90,0 %
		Génération graphique ou numérique des données en fonction d'une population cible	95,5 %	95,5 %	90,9 %

1. Ces résultats réfèrent au libellé du critère original et non à la dimension présentée dans ce tableau.

Le premier questionnaire comportait 42 critères. De ce nombre, 26 ont été acceptés, un a été rejeté et 15 ont été soumis de nouveau. Six nouveaux critères ont été proposés. La deuxième consultation visait à obtenir un accord sur 21 critères. De ce nombre, 14 ont été acceptés, deux ont été rejetés et cinq n'ont pas atteint un niveau de consensus acceptable quant à la clarté de l'énoncé. Cependant, la pertinence et l'importance de ces cinq critères ont été reconnues. Enfin, une troisième consultation a porté sur ces cinq critères. Trois d'entre eux ont été acceptés et deux n'ont pas été retenus puisque la clarté des énoncés n'a pas atteint un niveau de consensus de 85 % après trois formulations différentes. Nous croyons tout de même important de tenir compte de ces deux critères puisqu'ils ont été reconnus pertinents et importants lors de la deuxième consultation. Cependant, nous recommandons de valider la clarté des énoncés avant leur utilisation.

Discussion

Les commentaires émis par certaines expertes et certains experts démontrent que leur jugement a été influencé par leur connaissance des limites imposées par les systèmes informatisés actuels. En effet, ces commentaires réfèrent à la lourdeur imposée, à la lenteur des systèmes et à la difficulté d'assurer la gestion de telles fonctions. Lors de la deuxième consultation, nous avons dû inclure une directive rappelant aux expertes et experts de ne pas tenir compte des limites actuelles des systèmes informatisés puisque notre intention était justement de préciser un «idéal». Le niveau de consensus obtenu quant à la pertinence et à l'importance de certains critères aurait été plus élevé si l'ensemble des expertes et experts les avaient évalués dans la perspective d'une situation idéale.

Un critère relatif à l'utilisation d'un terminal dans chacune des chambres a dû être rejeté en raison de l'absence d'un niveau de consensus significatif. Les commentaires indiquent que l'installation d'un terminal dans chacune des chambres est technologiquement dépassée et trop coûteuse. Les expertes et experts préconisent plutôt l'utilisation de blocs-notes, de tablettes électroniques ou d'ordinateurs de poche.

Les critères relatifs à la fonction d'agrégation sont apparus très importants. Cependant, la satisfaction de ces critères pose un défi de taille, soit la normalisation des données cliniques pouvant être utilisées par une ou plus d'une discipline professionnelle. Cette normalisation est également recommandée par Zielstorff et al. (1993) et par le NCNR (1993). Le même nom, la même définition, les mêmes unités de mesures (ou critères d'évaluation) devraient être utilisés par les différentes dis-

ciplines dans la consignation d'une donnée commune afin de permettre l'intégration des données collectées. Il importe de préciser ici qu'un processus de normalisation s'applique uniquement sur les données et non sur l'analyse et l'interprétation de ces données. En effet, à partir d'observations identiques, chacune des disciplines doit pouvoir procéder à une analyse et à une interprétation différentes en fonction de la spécificité de leur intervention professionnelle.

Un critère stipulant que les différents écrans de saisie des données sont conçus de façon à respecter le modèle conceptuel adopté dans le centre hospitalier a dû être rejeté après deux consultations. Certaines opinions émises stipulent que les modèles conceptuels représentent un «concept dépassé», que «le modèle est à tendance philosophique de soins et avant tout, un choix d'individu», et enfin, que «le modèle doit être intégré dans la pratique et non dans le système informatique». Ces commentaires ne rejoignent pas les opinions émises par différentes auteures en soins infirmiers sur la pertinence et l'importance du lien que l'on doit établir entre les données collectées dans la pratique et les concepts véhiculés dans les modèles conceptuels (Adam, 1991 ; McLaughlin et al., 1990 ; Stevens, 1981 voir Ozbolt, 1988 ; Ozbolt, 1988). Cependant, l'opinion émise par les expertes et experts confirme la différence perçue par McLaughlin et al. entre la réalité de la pratique infirmière et ce que cette pratique pourrait ou devrait être. Ces auteures soutiennent que la conception d'un système d'information basé sur un modèle conceptuel spécifique à la discipline infirmière permet d'identifier les éléments de données, la signification que représentent ces données pour l'infirmière ou l'infirmier, ainsi que la relation entre les éléments de données. Toujours selon ces auteures, les modèles conceptuels nous permettent justement de préciser l'évolution souhaitable de la pratique infirmière. D'ailleurs, les craintes exprimées par Ford (1990) et par Harris (1990) à l'effet que les systèmes actuels risquent de changer notre conception des soins infirmiers et qu'à la limite, l'effet macroscopique de l'utilisation de ces systèmes constitue une menace à la reconnaissance de la profession d'infirmière provient du fait que les infirmières et infirmiers se voient contraints d'utiliser des systèmes informatisés qui ne répondent pas à leurs besoins et qui, dans la plupart des cas, ne supportent pas l'ensemble des étapes d'une démarche systématique basée sur un modèle conceptuel spécifique à la discipline infirmière. De fait, le cadre de Graves et Corcoran (1989) démontre explicitement que si la gestion et le traitement des données ne sont pas supportés par le système d'information, les informations pertinentes ne peuvent être synthétisées et le développement d'un savoir spécifique à la discipline infirmière s'en trouve particulièrement limité. À ce titre,

force est de constater que l'informatisation du plan de soins infirmiers ne constitue pas, au sens de la perspective de Graves et Corcoran, un système d'information en soins infirmiers puisque la gestion et le traitement des données, préalables à la rédaction du plan de soins, ne sont pas assurés. D'ailleurs, Adam démontre clairement les différences entre démarche systématique et plan de soins. Lorsque l'infirmière ou l'infirmier rédige son plan de soins, les étapes de collecte des données ainsi que d'analyse et d'interprétation de ces données sont déjà terminées. Débuter le processus d'informatisation à l'étape du plan de soins prive l'infirmière ou l'infirmier d'un outil précieux pour la collecte, l'agrégation, l'organisation, le déplacement et la représentation des données, prive la recherche infirmière de données cruciales permettant d'opérationnaliser les concepts véhiculés à l'intérieur des perspectives infirmières et enfin, limite grandement le développement d'un savoir propre à notre discipline. Ce constat oblige l'adoption d'un nouveau paradigme : la conception des systèmes d'information doit être orientée en fonction des données tel que le préconisent McLaughlin et al., Zielstorff et al. (1993) et, le NCNR (1993). D'ailleurs, le NCNR a émis des recommandations permettant d'orienter la recherche relative à la conception et au développement de la prochaine génération de systèmes d'information en soins infirmiers. Un message est clair : l'outil doit s'adapter à la pratique infirmière et non l'inverse.

Implication pour la pratique et la recherche en sciences infirmières

Notre étude a permis d'identifier les critères permettant de préciser la situation idéale dans laquelle les processus de gestion et de traitement des données nécessaires à la pratique infirmière seraient assurés de façon optimale. La situation idéale étant décrite, la conduite d'une analyse des besoins de gestion et de traitement des données nécessaires à la pratique infirmière est maintenant possible. Lorsqu'ils seront identifiés, ces besoins spécifiques de gestion et de traitement des données guideront les conceptrices et concepteurs dans l'amélioration des systèmes existants ainsi que dans la conception de nouveaux systèmes d'information en soins infirmiers. Enfin, l'identification de ces besoins permettra la construction d'un instrument de mesure de la capacité des systèmes d'information actuels à répondre aux besoins de gestion et de traitement des données inhérents à la pratique infirmière.

La satisfaction des critères identifiés exige que des recherches soient entreprises dans le but d'élaborer une classification de données cliniques infirmières et interdisciplinaires afin de permettre l'intégration

et l'échange de données entre les professionnelles et professionnels de la santé. Cette classification permettrait de normaliser les données à caractère clinique utilisées par les différentes disciplines professionnelles.

Il serait important, pour la discipline infirmière, de conduire une étude visant à identifier et à valider les critères permettant de préciser les processus idéaux de gestion et de traitement de l'information en soins infirmiers. Le concept d'information, étant défini comme une interprétation, une organisation, une structuration de données, rend nécessaire la juxtaposition d'un modèle conceptuel infirmier avec le cadre proposé par Graves et Corcoran (1989). Il est reconnu que les processus d'interprétation, d'organisation et de structuration des données, qui font partie intégrante d'une démarche clinique spécifique, doivent être orientés en fonction d'un modèle conceptuel propre à la pratique infirmière.

Limites méthodologiques

La méthode d'échantillonnage et la technique DELPHI comportent certaines limites. En fait, la méthode «boule de neige» utilisée pour constituer notre échantillon est une méthode de convenance, donc non probabiliste. Cependant, malgré cette limite, les méthodes de convenance demeurent les techniques les plus utilisées dans les recherches en soins infirmiers, et les risques de biais sont faibles lorsque le phénomène à l'étude est franchement homogène à l'intérieur de la population (Polith et Hungler, 1991). Sur ce dernier point, le fait de jumeler la méthode «boule de neige» avec la technique DELPHI pour l'obtention d'un consensus et le fait de tenir compte des données qualitatives collectées dans les commentaires émis permettent de minimiser les risques de biais inhérents à la méthode d'échantillonnage retenue.

La technique DELPHI comporte certaines limites méthodologiques : (a) la portée des résultats est tributaire du niveau d'expertise des répondants et des répondantes ayant accepté de participer à l'étude, (b) l'envoi répété de questionnaires comporte un risque d'attrition plus élevé en cours d'étude, (c) l'obligation d'en arriver à un accord risque de laisser de côté les positions extrêmes, et (d) il est difficile de cerner les raisons pour lesquelles les expertes et experts en arrivent à un consensus.

Énoncer des critères concis, simples et précis exige un travail laborieux et méthodique. Les problèmes soulevés quant à la clarté des énoncés relevaient souvent du fait qu'un critère avait été formulé de

sorte que plus d'une dimension pouvait être interprétée. Ce genre d'énoncé conduit inévitablement à une interprétation divergente du critère. Les expertes et experts peuvent alors être influencés par l'une ou l'autre des dimensions véhiculées par le critère. Nous avons dû porter une attention particulière à ce problème lorsque des énoncés de critères étaient reformulés.

Conclusion

Les critères identifiés et validés permettent de décrire les capacités optimales d'un système d'information à collecter, agréger, organiser, déplacer et représenter les données ainsi qu'à soutenir la prise de décision de la part de l'infirmière ou l'infirmier et à favoriser l'avancement de la recherche en sciences infirmières. Cette étude s'inscrit dans un vaste mouvement contemporain de reconnaissance de la nature spécifique de l'informatisation en soins infirmiers. Bien qu'il ne s'agisse ici que d'une première étape dans le processus d'identification des besoins d'information de la pratique infirmière, les résultats obtenus confirment la nécessité d'adopter un nouveau paradigme : la conception des systèmes actuels doit être remaniée de manière à assurer la gestion et le traitement des données spécifiques à la pratique infirmière.

Nous espérons que l'investigation du domaine des systèmes d'information, domaine d'étude en émergence dans la discipline infirmière, contribuera au développement des connaissances particulières aux sciences infirmières. Nous espérons également que notre recherche permettra de poursuivre les étapes nécessaires à l'identification des besoins spécifiques d'informatisation de la pratique infirmière et ouvrira la voie à l'établissement d'un lien significatif entre les systèmes d'information, la démarche systématique et les modèles conceptuels en soins infirmiers.

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Tracking Student Progress
in a Baccalaureate Nursing Program:
Academic Indicators

Andrea L. Brennan, Donna G. Best,
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Repérer les étudiants «le plus susceptibles de réussir» est depuis longtemps le but des établissements scolaires. Il s'agit en même temps d'élaborer des critères d'admission qui soient valides et fiables, et de diminuer le pourcentage d'abandon au sein du programme. Dans la présente étude, on a examiné les résultats scolaires avant l'admission au programme de baccalauréat en sciences infirmières et on les a comparés avec les résultats au niveau des cours et la progression des étudiants au cours des deux premières années du programme. Bien que les moyennes aient montré que les deux classes d'étudiants présentaient un « risque moindre » d'échec à l'université, seulement 60 % des 89 étudiants des deux classes progressaient sans interruption. Les étudiants qui avaient de bons résultats à la fin du secondaire avaient tendance à continuer d'avoir de bons résultats dans les cours préalables pour l'université et ensuite en sciences infirmières. Les étudiants ayant des résultats médiocres à la fin de la première ou de la deuxième année en sciences infirmières avaient des moyennes plus basses dans le secondaire et dans leurs cours préalables pour l'université. Ces résultats ont des conséquences logiques pour l'admission et l'orientation des étudiants, et ils mènent à la recommandation que des études similaires soient menées dans tous les programmes en sciences infirmières et qu'une éventuelle étude longitudinale au sein du programme pris comme exemple soit menée afin de valider et de développer les résultats de l'étude.

Identification of students "most likely to succeed" has long been a goal of educational institutions, from the perspective of both identifying valid and reliable admission criteria and decreasing attrition rates within a program. In this study, scholastic performance prior to admission to a baccalaureate nursing program was examined in relation to students' level of achievement in courses and their progression in the first two years of the program. Although their incoming averages indicated that both classes of students were at "low risk" for failure in university, only 60% of the 89 students in the two classes were progressing without interruption. Students who did well in high school tended to continue to do well in prerequisite university courses and later in nursing. Students who were behind in their class at the end of Year 1 or Year 2 in the nursing program had significantly lower mean averages on high school credits and on prerequisite university courses. These findings have implications for the admission and counselling of students and lead to the recommendation that similiar studies across nursing programs and a prospective longitudinal study within the sampled program be carried out to validate and expand upon study findings.

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Identification of students "most likely to succeed" has long been a goal of educational institutions, from the perspective of both identifying valid and reliable admission criteria and decreasing attrition rates within a program (Clemence & Brink, 1978; Higgs, 1984; Oliver, 1985; Seither, 1980; Stronck, 1979; Wold & Worth, 1990). Economic constraints in nursing education and limited workforce openings are exerting added pressures on educational institutions to streamline programs and to invest their resources in those students who are most likely to complete the program and obtain licensing (Oliver). To reach these goals, numerous cognitive and noncognitive variables have been examined as possible predictors of achievement in nursing courses and/or indicators of students' potential to complete their programs. Although numerous studies have been done, many questions remain with respect to predicting which students will do best in nursing (Higgs).

Among cognitive variables examined in previous studies, students' grade point averages (GPAs) on admission to nursing programs and in prior university coursework consistently have been the best single predictor of later academic success in nursing (Clemence & Brink, 1978; Hayes, 1981; Higgs, 1984; Sharp, 1984; Stronck, 1979; Wold & Worth, 1990; Yocum & Scherubel, 1985). The only other indicators consistently found to predict student success reliably were the verbal portion of the Scholastic Aptitude Test (SAT) (Hayes; Higgs; Kissinger & Munjas, 1982; Wold & Worth), and the composite scores from the American College Test (ACT) (Felts, 1986; Jenks, Selekman, Bross, & Paquet, 1989; Lengacher & Keller, 1990). Added power was noted when both the GPA and standardized test scores were considered together. Most American colleges and universities require the SAT or ACT for admission. There is no requirement for universal, standardized preadmission testing for Canadian universities.

High school performance also has been examined in relation to achievement in nursing programs. Biology and mathematics grades and high school rank were positively correlated with later academic success in nursing (Oliver, 1985; Seither, 1980). In a Canadian study, Weinstein, Brown, and Wahlstrom (1980) used discriminant analysis to examine the transcripts of 1169 nursing students. They found that only senior-level courses predicted academic success in college-based nursing programs in Ontario. They also found that (a) the number of pure and applied science courses completed in high school was the best overall predictor of academic success in nursing, (b) a combined science grade was a better predictor than individual grades in each subject, and (c) students' averages in English and mathematics were also reliable predictors of academic success.

The findings and implications of studies that examined the influence of noncognitive variables on students' progress in nursing programs have been varied. In several of the studies examining noncognitive variables, demographic variables and/or standardized personality test scores have been shown to differ between "successful" and "non-successful" student groups (Alichnie & Belluci, 1981; Hayes, 1981; Kissinger & Munjas, 1982; Wall, Miller, & Widerquist, 1993; Yocum & Scherubel, 1985). The implications of these findings raise concerns. Firstly, factors such as age, ethnic background, or scores on personality tests cannot ethically be used as selection criteria for admission or progression in a program. Secondly, universal testing is expensive and impractical. Thirdly, the relative contribution of these variables beyond the prediction possible based on GPA and SAT (or similar standardized testing) scores has been negligible (Alichnie & Belluci; Hayes).

Several of the studies reviewed used completion of the nursing program as a measure of success (Clemence & Brink, 1978; Horns, O'Sullivan, & Goodman, 1991; Mills, Sampel, Pohlman, & Becker, 1992; Schwirian & Gortner, 1979; Seither, 1980; Yocum & Scherubel, 1985). The best indicators of senior-level achievement and/or successful completion of licensing exams were grades in the previous semester or year. This was acknowledged as a very late point to be identifying student difficulties, and it is obviously far too late to be helpful in establishing criteria for ranking admission candidates (Fowles, 1992; Horns et al.; Jenks et al.; Mills et al.).

The majority of the studies reviewed used an entire population of students as the sample; thus, findings were powerful indicators within that population. As admission criteria, curricula, and student populations vary according to program, the generalizability of findings is limited to the program studied. All of the researchers recommended cross-validation of their findings in different programs and student populations. Generalizability of previous findings is further limited by the age of the findings. The majority of studies were published in the 1970s and early 1980s and examined the progress of students in nursing programs between 1968 and 1982.

Although most university nursing programs in Canada consider applicants entering from high school, the sole baccalaureate nursing (BN) program in Newfoundland has, for the past several years, required at least one year of university studies – to complete 10 prerequisite courses. In September 1996, the university school of nursing and the hospital schools will implement a collaborative baccalaureate curriculum, which will not require university courses before admission. As

the prerequisite year for the BN program is phased out, it will be important to learn whether academic success can be predicted from high school grades. It is critical that student progress be monitored and that predictors of student success be identified, in order to (a) establish valid admission criteria, (b) identify the need for remedial intervention, and implement programs to address such needs, and (c) counsel students prior to admission and throughout the program with a view to decreasing the rate of attrition.

The purpose of this study was to examine the academic progress of students during the first two years of the BN program using data from their academic records. The high school averages of the two consecutive classes were higher than those for the whole group of students entering Memorial University of Newfoundland (MUN) during their respective admission years. These higher averages would indicate that both classes of students were at "low risk" for failure in university (Wilson, 1991). However, only 60% of the students in the two classes progressed without interruption.

Conceptual Framework

Higgs' (1984) *Model for the Study of Prediction of Success in Nursing Education and Nursing Practice* and a review of the literature provided direction for selecting the variables examined in this study. Higgs identified a number of pre-major variables that influence nursing major variables. In this study, the pre-major variable of scholastic performance was examined in relation to the nursing major variables of level of achievement in courses and progression in the program. Several researchers suggest that grades on course work within a program may be used to predict success in the program (Griffiths, Bevil, O'Conner, & Wieland, 1995; Hayes, 1981; Higgs; Horns et al., 1991; Mills et al., 1992). Such knowledge can help identify high-risk students needing academic assistance. Thus, relationships between grades on first- and second-year courses were also examined.

Research Questions

A descriptive correlational study was conducted to address the following questions:

1. Are the high school grades of baccalaureate nursing students related to their grades in prerequisite university courses and in the nursing program?

2. Are there relationships between the grades of baccalaureate nursing students in university courses and in nursing?

3. Is there a relationship between the grades of baccalaureate nursing students in the first and the second year of the nursing program?

4. Can differences in the academic backgrounds of groups of baccalaureate nursing students account for different levels of progress in the nursing program?

Method

Subjects

Subjects ranged in age from 19 to 40 years with a mean age of 21.04 years ($SD = 3.25$). There were 78 females and 11 males in the study, representing the entire population of full-time students in the two years. Students had completed an average of 20 ($SD = 8.45$) university courses, including the 10 prerequisites, before being admitted to the school of nursing. All but one had completed high school in Newfoundland. Demographically, their backgrounds represented a wide range, with more than 50 communities and high schools of varied sizes recorded.

Program

The four-year (nine-semester) BN program comprises an established sequence of 39 required courses and five electives. First-year courses include the following: introductory nursing concepts and skills, teaching-learning, anatomy and physiology, health assessment, pathology, nutrition and pharmacology, and counselling. Second year comprises primarily six clinical courses arranged in pairs; one focuses on clinical theory and the other is a clinical practicum in one of three client groups: childbearing families, children, and adults. Other second-year courses include transcultural nursing, a second counselling course, and a three-week consolidated clinical practicum during the final weeks of the winter semester. As courses in Year 1 are prerequisite to those in Year 2, failure in or withdrawal from Year 1 courses constitutes an interruption of at least one year in a student's progress.

Procedure

The research protocol was approved by the school of nursing and the MUN Human Investigations Committee. The academic records of 89 BN students from two consecutive years were examined. Grades in required high school, prenursing, and nursing courses were recorded.

The variables examined consisted of (a) high school average, (b) prenursing average in prerequisites, (c) grades and yearly averages in the first two years of the nursing program, and (d) level of progress two years after beginning the nursing program. Variables were as follows:

High school average. The 11 high school credits required for university admission were averaged (Group mean [M] = 80.66%; SD = 7.68). These were two mathematics, three English, two science, two humanities, and two electives. (A 65% average was required to be eligible for university admission.) A second high school average was calculated based on seven of the 11 prerequisites. This average comprised the grades in senior science, mathematics, and English (M = 78.18%; SD = 8.43). These specific subjects, as well as the number of senior sciences completed in high school, were chosen for examination as they were found, in a prior Canadian study (Weinstein et al., 1980), to be the best indicators of later success in nursing programs.

Pre-nursing average. The students' combined averages in 10 prerequisite courses and their cumulative averages in all university courses prior to entering nursing school were calculated (M = 70.91%; SD = 4.50). The 10 prerequisite university courses included two introductory courses in each of five subjects: biology, chemistry, English, mathematics, and psychology. Again, based on the findings of Weinstein, Brown, and Wahlstrom (1979) and Weinstein et al. (1980), and because the first two years of the BN program are strongly science-based, an additional average was calculated using four prerequisites: biology, chemistry, mathematics, and English (M = 69.53%; SD = 4.79).

Grades and averages in nursing. Numerical grades attained in each of the nursing courses in the first two years of the program were recorded. Yearly averages were calculated based on the combined grades of all required courses in each year (M [Year 1] = 71.42%; SD = 4.61; M [Year 2] = 72.54%; SD = 3.24).

Grades in clinical practicum courses could not be included in the relationships among nursing grades examined. These courses are taught and evaluated in small groups; therefore, multiple instructors are involved in the grades allocated within each class. In addition, in one of these courses, during the years studied, different evaluation tools were used to grade clinical performance in the two class groups.

Level of progress. Student progress was defined in terms of completion of the required courses sequenced for the first two years of the

nursing program. The students were placed into one of three categories: progression without interruption, progression with interruption, and withdrawal from the program. Upon completion of the 21 courses comprising the first two years of the BN program, 53 (59.6%) of the 89 students were progressing without interruption, 24 (27%) were behind their entering classmates, and 12 (13.5%) had withdrawn.

Analysis

Data were coded, grouped, and analyzed using an SPSS-X program. No significant differences were found between the two classes for the high school prenursing averages; therefore, the data were merged. Descriptive statistics, Pearson's R correlation, t-tests, and ANOVA were used to examine the data for relationships and group differences.

Results

High school average: Relationship to subsequent studies. High school average based on the 11 university prerequisites was found to be positively correlated with both the students' average on the 10 prerequisite university courses and Year 1 average in nursing ($r = .49$, $r = .51$, respectively; $p < .01$). A similar relationship was noted between the average based on the seven key high school credits – in biology, mathematics, and English – and Year 1 average in nursing ($r = .53$, $p < .01$). Individually, biology had the highest correlation with Year 1 nursing average, followed by English and then mathematics ($r = .51$, $r = .48$, $r = .34$, respectively; $p < 01$).

The study data were grouped to determine whether the number of pure and applied science courses completed in high school could predict academic success in nursing (Weinstein et al., 1980). Within the group, 79 students (88.8%) had completed senior-level biology in high school, 59 (66.3%) chemistry, and 43 (48.3%) physics. Seventeen students had completed one of these senior sciences, 46 (51.7%) had completed two, and 24 (27.0%) had completed all three senior sciences. However, no difference was found in nursing averages for either Year 1 or Year 2 based on the number of senior sciences completed in high school.

Prenursing averages: Relationship to nursing grades. Relationships between grades in prerequisite university courses and grades in nursing are outlined in Table 1. Grades in biology, mathematics, and chemistry, but not English, consistently were significantly correlated

with students' grades in first-year nursing courses and Year 1 nursing average. The averages of the 10 prerequisites and cumulative averages prior to admission to nursing were also significantly correlated with grades in nursing.

Table 1
Pearson Correlation Scores between
Prerequisite Courses and Year 1 Courses

Prerequisite University Courses	Year 1 Courses			
	Health Assessment	Pharmacology & Nutrition	Pathology	Year 1 Average
Biology	.33*	.40*	.33*	.45*
Chemistry	.33*	.46*	.36*	.49*
English	.09	.23**	.07	.15
Math	.27**	.37*	.19	.37*
Average on combined 10 prerequisites	.47*	.51*	.43*	.61*
Cumulative prenursing university average	.37*	.47*	.35*	.60*

Note: * $p < .01$; ** $p < .05$

Within the nursing program: Relationship between course grades in Year 1 and Year 2. There was a strong positive correlation between Year 1 average and Year 2 average in nursing ($r = .74$, $p < .01$). First-year grades strongly correlated with clinical theory courses in Year 2 (see Table 2).

Using ANOVA, a significant difference in the Year 1 average was demonstrated based on the number of prerequisite university courses repeated before admission to nursing ($F [2, 83] = 4.51$, $p < .01$). Students who repeated more than two courses had significantly lower grades in nursing courses than those who had not repeated any.

Accounting for different levels of progress. T-tests were used to determine whether a difference existed with respect to past academic performance between students who were progressing without interruption and those who were behind in their class after two years in nursing. Students who were behind at the end of Year 1 or Year 2 in nursing had significantly lower mean averages on high school credits and on prerequisite university courses (see Table 3).

Table 2

Pearson Correlation Scores between Year 1 Foundation Courses and Year 2 Clinical Theory Courses

| | Year 2 Clinical Theory Courses | | |
| | Nursing Care of: | | |
Year 1 Courses	Childbearing Families	Children	Adults
Introduction to nursing	.37	.48	.48
Pathophysiology	.40	.46	.49
Health assessment	.48	.71	.54
Nutrition & pharmacology	.44	.59	.60
Anatomy & physiology	.32	.46	.41

Note: All correlations are $p < .01$

Table 3

Means in High School and Prenursing University Averages by Level of Progress

| | With Class | | Behind Class | |
	M	(SD)	M	(SD)
		Year 1		
High School				
11 credits	82.68	(6.44)	76.48	(8.55) *
7 credits	79.82	(7.46)	73.70	(9.14) *
University prenursing				
10 prerequisites combined	71.76	(4.67)	68.20	(2.58) *
4 prerequisites combined	70.29	(5.00)	66.96	(2.90) *
		Year 2		
High School				
11 credits	83.22	(6.61)	78.56	(6.49) *
7 credits	80.40	(7.64)	75.56	(6.90) *
University prenursing				
10 prerequisites	71.71	(4.46)	68.85	(2.90) *
4 prerequisites	70.29	(4.87)	67.53	(3.34)**

Note: Differences between the means are significant – $*p < .01$; $**p < .05$.

Because of the small group size, and because of wide variation in the timing and reasons for withdrawal, the "withdrawal" group could not be included in the tests of difference completed. Reasons reported by students for withdrawing from the program were (a) switched directly to another program ($n = 5$), (b) career choice no longer nursing ($n = 3$), (c) failure of multiple courses ($n = 2$), or (d) financial reasons ($n = 2$). Of the 12 students who had withdrawn, 10 had completed the first year and eight had failed at least one nursing course prior to deciding to withdraw.

Discussion

Consistent with the reviewed literature and the Higgs' (1984) *Model for the Study of Prediction of Success in Nursing Education and Nursing Practice*, students who had been high academic achievers in high school continued to do well in prerequisite university and nursing courses. Cumulative university average prior to entering nursing showed the same high correlation with success within the program as university GPA had shown in the previous studies (Clemence & Brink, 1978; Hayes, 1981; Higgs; Sharp, 1984; Wold & Worth, 1990). Consistent with the findings of Weinstein et al. (1979, 1980), biology and mathematics grades, in both high school and university, were correlated with course grades or yearly averages in nursing. English grades in high school, but not in university, were correlated with the nursing grades or averages. However, the findings of this study did not agree with those of Weinstein et al. (1979) in that the number of sciences completed in the final year of high school bore no relationship to academic success later in nursing.

The positive correlation of nursing grades/average with high school English, but not university English, may be explained by the nature of the required courses in high school: students must take both a senior language and a senior literature course prior to entering university, the former focusing on grammar, the structure of English, and writing skills. However, university courses have focused on academic review of varied forms of literature; students may not be required to write or to individually analyze literature. Stronck (1979) found similar discrepancies between English marks and success in nursing studies. He concluded that "the narrative skills of applicants correlate well with their future performance in the professional nursing college. Unfortunately, an applicant's grades in English courses are not necessarily any guarantee that he can write" (p. 607).

Students who progressed in their nursing class had significantly higher averages in high school and prerequisite university courses than those who were behind. This pattern lends support to the continued use of current admission criteria, which have focused on the average attained in the 10 prerequisite courses. Admission criteria for direct entry from high school may also be feasible with biology, mathematics and English as prerequisites.

The findings of this study have implications for the MUN School of Nursing. Firstly, problems in Year 1 of nursing are often reflected in Year 2 performance. Secondly, many students who wish to enter nursing repeat the prerequisites in order to increase their average across the 10 courses and thereby increase their competitive standing among the applicants. Students who repeated courses prior to admission, particularly those who had repeated more than two, were more likely to be behind their classmates at the end of Year 1 in nursing. This delay has two sources: failing courses, and dropping courses to lighten their workload in a respective semester. Remedial efforts could be made to help those students at risk or already having difficulties, thus breaking the pattern of sequential problems from one year to the next. These could include workshops in study skills or time-management, arrangements for peer-tutorials, and study programs focusing on areas of difficulty.

Advice to applicants should be based on the following findings: (a) repeating the requisite courses in order to gain admission to nursing does not correlate with academic success within the program, (b) difficulties at one level are often paralleled by difficulties in subsequent courses, and (c) grades in university biology and chemistry are strongly associated with grades in nursing courses. Students should also be encouraged to complete senior-level biology in high school.

Consistent with many previous studies, the primary limitation of the present research is the uniqueness of the school and the program, which limits the generalizability of findings. Additionally, the sample size did not allow for analysis beyond a descriptive level. The authors recommend that a prospective longitudinal study be undertaken, one that would add subjects with each incoming class and follow their progression through the nursing program and licensing process. Data collection should be broad-based and include academic, demographic, and personal data as new students enter the program, as well as interviews at various points in the program to identify students' personal perspectives of factors contributing to their progress. Achievement in both theory and clinical courses should be measured. Such a study design

would allow use of more components of the Higgs (1984) model in identifying key influences in student success and would help in cross-validating other findings. Although such knowledge will not aid in establishing or revising admission criteria, it could be very helpful in identifying needs for remediation and/or counselling among specific groups of candidates and students within the program.

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Predictors of Work-Family Conflict, Stress, and Job Satisfaction among Nurses

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La présente étude, d'après une analyse de régression multiple, a examiné en quoi les variables démographiques, liées à l'emploi, au soutien social et à la prestation de soins pouvaient augurer du conflit entre le travail et la famille, le stress et la satisfaction professionnelle parmi un échantillon de cent une infirmières hospitalières ayant la responsabilité de s'occuper d'un enfant et/ou d'un parent âgé. Les conclusions ont révélé que le soutien familial, le soutien organisationnel perçu pour la vie de famille, le volume de travail perçu et l'engagement dans les soins aux enfants étaient principalement responsables des résultats étudiés. De plus, l'étude indique combien il est important de mesurer séparément la source et la direction du conflit entre le travail et la famille.

Using multiple regression analysis, this study examined the contribution of demographic, job-related, social-support, and caregiving variables to the prediction of work-family conflict, stress, and job satisfaction among a sample of 101 hospital-based nurses who had responsibility for the care of a child and/or an elderly relative. The results revealed that family support, perceived organizational support for family life, perceived workload size, and involvement in child care were mainly responsible for the outcomes studied. In addition, the study underscores the importance of separately measuring both the source and the direction of work-family conflict.

Whereas the study of stress at work and the study of stress in the family each have long histories, only recently has attention turned to the relations between these two spheres of life. This is probably because the two spheres were largely demarcated along gender lines, except for the few occupations dominated by women. Even in the nursing and teaching fields, the prevailing assumption was that women's sense of identity and self-worth was primarily founded on their domestic roles as mothers and wives, and only secondarily on their performance and achievements at work. Moreover, it was expected that women would withdraw from the workforce during periods in the family life cycle when children had the greatest need for protection and support and when elderly family members required sustained caregiving. In addi-

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tion, employees, whether male or female, who appeared to have personal or family problems that interfered with their productivity or relations at work were subject to reprimand, and even dismissal.

Today, demographic and labour-force trends have forced recognition of the interplay between work and family, especially the tensions that can arise at the intersection of these two domains of life. In Canada, the number of working women has increased dramatically in the past 30 years, rising to 45% in 1991 (Mitchell, 1993). Participation in the labour force varies according to age, however. Whereas, in 1991, 37% of women aged 45 and older were employed, fully 80% of women aged 35-44 and 79% of those aged 25-34 were employed (Mitchell, 1993). The number of dual-income families with children more than doubled between 1961 and 1986, from less than 20% to 41%. Moreover, the majority of women with preschool-age children no longer follow the convention of withdrawing from the workforce or deferring their entry into it. These statistics clearly reflect the blurring of traditional patterns of women's participation in the labour force.

Women's and mothers' heavy representation in the labour force is not the only development that complicates the relationship between work and family life. There is also evidence of a greying workforce, increasingly dominated by middle-aged employees who are likely to have responsibility for the care of an elderly relative (Statistics Canada, 1993). In an era when government policy regarding long-term care favours "family care" – a euphemism for care by wives and daughters – the ramifications for employed women can be job loss, curtailment of hours of work, disruption of work schedules, and lost opportunities for advancement (Martin-Matthews & Campbell, 1995; Martin-Matthews & Rosenthal, 1993; Myles, 1991).

Sources, Bases, and Predictors of Work-Family Conflict

What circumstances heighten the likelihood of conflict between work life and family life? To answer this question, it is necessary to distinguish between the source and the basis of the conflict. Since the source of the conflict concerns its origins in either the work domain or the family domain, we must distinguish between work interference with family and family interference with work (Frone, Russell, & Cooper, 1992; Gutek, Searle, & Kelpa, 1991). Each of these sources of conflict is likely to have its own determinants. In addition, previous research on issues of work-family conflict among a national sample of Canadian employees (Gottlieb, Kelloway, & Fraboni, 1994) led us to suspect that both sources can have two bases: (1) time-based conflict, whereby the

time demands of one sphere *interfere* with role performance in the other; and (2) strain-based conflict, whereby strain arising from the demands of one role *spill over* to performance in the other role. Examples of strain-based conflict are thoughts, moods, or energy depletion that cross boundaries (Greenhaus & Beutell, 1985).

In selecting the factors that may contribute to each source of time- and strain-based conflict, one must identify antecedents that have both substantive and domain relevance. Substantive relevance refers to an informed choice of predictors, based on identifying the sources of time pressure and of role strain at work and at home. Domain relevance refers to the match between the predictor and both the source and the basis of the conflict. Hence objective information about the amount of time invested in work, and how it is scheduled, should predict the extent of time-based work interference with family life, just as information about the time invested in the care of dependents should predict time-based family interference with work. Similarly, subjective percep- tions of strain in each role should predict strain-based conflict. For example, measures of the frequency of intrusive thoughts about care of dependents, and of physical exhaustion caused by the job, should predict strain-based family interference with work and work interfer- ence with family, respectively. For social support, considerations of sub- stantive relevance suggest the adoption of measures that tap both emo- tional and practical support from family and from co-workers. Considerations of domain relevance suggest that family support would (negatively) predict both bases of family interference with work, whereas co-worker support would (negatively) predict the two bases of work interference with family.

Predictors of Work-Family Conflict among Nurses

Neal (1990) notes that few studies have examined any aspect of the rela- tionship between types of occupations and ability to balance work and family responsibilities. However, the limited research findings that are available suggest that the range of occupations offers employees varying opportunities to adjust their work and domestic demands. In light of the preponderance of women in the nursing profession in North America, and the substantial amount of occupational stress they expe- rience, it is surprising that so little attention has been paid to the nature and antecedents of the conflict between their work role and their family role. In fact the theme of *continuity* in nurses' caregiving role – at home and at work – has received more attention than has the possibility of role *conflict* (Marshall, Barnett, Baruch, & Pleck, 1990; Neal); that is, it

has been suggested that their professional caregiving skills transfer well to the home and family, facilitating integration of the two roles.

There is abundant evidence that hospital nurses experience higher levels of stress than other health professionals. In two studies on the development and validation of occupational-stress measures for health-care workers, nurses reported the most stress: on the 30-item Health Professions Stress Inventory (Wolfgang, 1988) they reported more stress than family physicians and pharmacists; and on the Work-Related Strain Inventory (Revicki, May, & Whitley, 1991) they reported more stress than family physicians, emergency medical technicians, emergency medicine residents, and flight nurses. Literature on the specific sources of occupational stress among nurses reveals the most common sources to be the sheer workload, the hectic pace, shiftwork – especially frequent changes in the scheduling of shifts – strained communications among nurses and other health-care staff, and difficulties arising from administrative and organizational pressures and constraints (Bailey, 1985; Jones, Janman, Payne, & Rick, 1987; McGrath, Reid, & Boore, 1989). After conducting a qualitative study of 28 acute-care staff nurses in British Columbia, Hartrick and Hills (1993) reported that workload factors related to "too many demands" and problems with interpersonal relations topped the list of perceived stressors.

Hartrick and Hills (1993) also inquired directly about nurses' unmet needs for support. They found that 71% of the nurse respondents did not receive sufficient help with nursing duties, while 57% reported they did not have enough opportunity to express their feelings to their peers and thereby elicit emotional support. Conversely, job satisfaction among nurses has been consistently and strongly linked to supportive relations and open communications with peers, physicians, and supervisors. In sum, it would appear that relations at work are on the whole more stressful than supportive, in part because nurses are so heavily taxed by their job responsibilities that they have little opportunity to support each other.

To date, only one study has directly examined the relations between nurses' work lives and home lives, concentrating on the tensions and conflicts that arise from their dual caregiving role. Using a qualitative interview method, Ross, Rideout, and Carson (1994) found that nurses felt "torn between two worlds," describing their experience largely in terms of time-based conflict. However, they also expressed sentiments that reflect strain-based conflict, mainly taking the form of mental preoccupation with work matters while at home. In addition, the results of this study contribute to the evidence that co-worker support is a pre-

cious and rare commodity. The respondents had "a sense of working in isolation" on the job, and expressed much more satisfaction with the support they received from their spouses and children than with the support of peers and supervisors.

Study Aims

In sum, evidence from studies of occupational stress points to the substantive relevance of the following factors in predicting work-family conflict: insufficient support at home and at work, long hours, frequent schedule changes, and a perceived large workload. In the present paper, regression analysis is used to discern how much each of these factors contributes to the four types of work-family conflict, and to determine their cumulative impact on such conflicts among nurses. To reach this objective, separate measures of work-family conflict that distinguish between the source and the bases of the conflict are taken and three sources of support are distinguished. In addition, the present study aims to determine the relative and combined impact of the demands and support arising from work and from home on the perceived stress and job satisfaction experienced by nurses. By adopting these measures, the study can make a greater contribution to both theory and the formulation of practical programs and policies to assist nurses.

Method

Survey Procedure

Data for the current study were drawn from the Work and Homelife Questionnaire, which we designed for our program of research as members of the Work and Eldercare Research Group of CARNET, the Canadian Aging Research Network. The 16-page survey consisted of four sections, the first inquiring about the objective characteristics and subjective assessments of the respondent's job, as well as stress, absenteeism, and job difficulties. The second section was designed to gauge the nature and extent of the respondent's dependent-care responsibilities, the help and support received from family members, and the extent of the respondents' involvement in community activities in addition to their job and domestic commitments. The third section, which was devoted to issues of balancing employment and family life, included questions about the extent of conflict between the two spheres; the extent of perceived co-worker, managerial, and organizational support; and the respondent's use of and (if not available in her work-

place) desire for a set of flexible work arrangements and family-friendly services. The final section concerned the respondent's demographic characteristics.

The survey was distributed to designated employees in three hospitals in the province of Alberta that operated under a single corporate umbrella. Since the hospitals were unable to supply information about the total number of nurses who received a survey, it is impossible to identify the response rate for nurses in particular. Fifty percent of the workforce in each department of the three hospitals was randomly sampled, for a total of 1781 employees. Of this group, 557 employees returned survey instruments in usable condition, constituting a response rate of 31%. This response rate compares favourably with other employee surveys on the subject of balancing work and family (Neal, Chapman, Ingersoll-Dayton, & Emlen, 1993; Scharlach, Sobel, & Roberts, 1991), probably due to the following factors: respondents were given permission to complete the survey during normal working hours, the subject was of personal interest to the respondents, the survey was accompanied by a strong letter of support from the hospital's senior vice-president, and two reminders were sent, at weekly intervals. In both age (mean = 45 years) and gender (90% women), the final sample of respondents is comparable with the initial pool of employees surveyed.

Respondent Characteristics

For the purpose of the present analysis, 154 nurses were selected on the basis of the following two criteria: they had at least one child under the age of 19 living at home with them and/or they provided at least one hour of assistance per week to a relative who was at least 65 years of age. The amount of time devoted to elder care was estimated by the respondents after completing a checklist to indicate how frequently they provided 26 types of assistance to an elderly relative. Of the 154 nurses, 101 provided complete data on the study variables.

All of the respondents were women; 81% were married, 11% were divorced or separated, 2% were widowed, and 6% had never been married. Predictably, the sample averaged 15.5 years of education, revealing that the vast majority had received some post-secondary training. The mean total annual household income fell into the $60,000-$70,000 range, and the average age was 43.5 (SD = 5.3) years, with the range extending from 36 to 56 years. The respondents' average workday was 8.7 hours, with almost 20% reporting that their workday averaged at least nine hours. The potential for work-family conflict is

made even more apparent by the revelation that 75% of the respondents worked on the weekend at least twice a month and that an additional 8% worked on the weekend at least once a month. In addition, more than half the respondents reported that their work schedule changed at least on a monthly basis, 44% stating that their current work schedule involved the afternoon/evening shift and 35% reporting that they worked the night shift. Of the 101 respondents, 62% were registered nurses, the remainder having other nursing qualifications. The mean length of employment with the organization was 11 years (range = 1.5 – 28 years).

Measures

Controls. In light of evidence from previous studies that age and income are significant determinants of the outcomes examined here (Gottlieb et al., 1994; Neal et al., 1993; Scharlach et al., 1991), and because we were interested in determining the additional predictive power of the job-related, caregiving, and support variables, age and total annual household income were used as control variables in the regression analyses. Age was measured in years, and income was measured in 13 categories ranging from less than $10,000 to more than $120,000, with increments of $10,000 between each category.

Predictors. Three sets of predictors were included in the analyses. Job-related information included total weekly hours of paid employment, frequency of work-schedule changes (1 = not at all; 2 = every week; 3 = every two weeks; 4 = every three weeks; 5 = every four weeks), and a four-item measure tapping perceived quantitative workload. A five-point, Likert-type response format, ranging from strongly disagree (1) to strongly agree (5), was used for these latter four items, which included the following statements: "I have enough time to complete my work" (reversed item); "In my job, I have too much to do"; "I can rarely finish the work I have to do"; "I usually have time on my hands" (reversed item). Scores ranged from four to 20, with higher scores signifying higher quantitative workload. The alpha for this measure was .76.

Caregiving information constituted the second set of predictors, including both child care and elder care. Both types of dependent care were measured by separately summing respondents' ratings of the frequency (1 = never; 2 = once a month or less; 3 = two or three times a month; 4 = once a week; 5 = several times a week; 6 = daily) with which they provided 26 different kinds of assistance to one or more children who lived with them and/or to one or more elderly relatives. The types

of assistance included five activities of daily living (ADL; e.g., help with bathing, feeding, dressing) and 21 instrumental activities of daily living (IADL; e.g., help with transportation, shopping, household chores, meal preparation, money management). The alpha for child-care assistance was .93 and for elder-care assistance .91. The validity of these care-giving variables is based on evidence that they correlate in a predictable fashion with measures of global stress and subjective burden (Gottlieb et al., 1994).

The third set of predictors tapped perceptions of three sources of social support. The first is an eight-item measure of satisfaction with perceived family support, of which four items tapped tangible support (e.g., "The amount of practical help you get from family members when problems come up between work and family") and four items tapped emotional support (e.g., "The amount of caring and concern you get from family members"). The alpha for this measure was .91. The second measure tapped perceived co-worker support in the same fashion, including four items to gauge tangible help (e.g., "If I had to miss work for part of the day, I have co-workers who would fill in for me as much as they could") and four to gauge emotional support (e.g., "I have co-workers who would support me through tough personal times"). The alpha for this measure was .79.

The final measure of support included seven items that tapped perceived organizational support for employees' family responsibilities. It included such items as "In order to succeed in this organization, employees have to put their personal/family life second" (reversed item) and "This organization has ways of showing that it supports people who have personal/family responsibilities." The alpha for this scale was .83. All three of these scales had five-point response formats, the family-support measure calling for ratings of satisfaction (1 = very dissatisfied; 5 = very satisfied), whereas the co-worker- and organiza-tional-support scales called for ratings of agreement (1 = strongly dis-agree; 5 = strongly agree).

Outcomes

A total of 22 items was used to assess work interference with family (WIF) and family interference with work (FIW), five items tapping time-based WIF (e.g., "Job demands keep me from spending the amount of time I would like with my family"), five tapping time-based FIW (e.g., "Family demands make it difficult for me to have the work schedule I want"), six tapping strain-based WIF (e.g., "I do not listen to

what people at home are saying because I am thinking about work"), and six tapping strain-based FIW (e.g., "My family life puts me into a bad mood at work"). The empirical basis for distinguishing among these four dimensions of work-family conflict has been established by a confirmatory factor analysis (Kelloway, Gottlieb, & Barham, 1995). Moreover, the scales demonstrated satisfactory test-retest reliability over a six-month period and they correlated in a predictable fashion with measures of global stress and organizational attitudes (Kelloway et al., 1995). A four-point response scale was adopted (1 = never; 2 = sometimes; 3= often; 4 = almost always), and all but one of the alphas exceeded .70 (time-based WIF = .80; time-based FIW = .62; strain-based WIF = .72; strain-based FIW = .80).

Ten items, derived from a standardized measure (Cohen & Williamson, 1988), were used to inquire about global perceived stress; these included such items as how much of the time in the previous month the respondent had felt in control, tired, calm, energetic, and unable to cope. The response format was: none of the time (1), almost never (2), some of the time (3), most of the time (4), and all of the time (5). The alpha for this measure was .76. Finally, job satisfaction was measured with 15 items based on standardized measures of organizational life (Cammann, Fichman, Jenkins, & Klesh, 1979; Seashore, Lawler, Mirvis, & Cammann, 1982) that tapped both extrinsic and intrinsic satisfaction on a five-point Likert-type scale ranging from very dissatisfied (1) to very satisfied (5). The alpha for this measure was .90.

Results

Descriptive statistics and intercorrelations for all study variables are presented in Table 1.

To identify the predictors of the outcomes (time-based WIF, strain-based WIF, time-based FIW, strain-based FIW, stress, and job satisfaction), we conducted a series of hierarchical regression analyses using forced entry of variables at each step. For each outcome variable, we first entered the demographic measures (age and household income). At the second step, the work-related variables were entered (length of average work week, quantitative workload, frequency of work-schedule changes). At the third step, the caregiving activities (child care and elder care) were entered. Finally, at the fourth step we entered measures of workplace (co-worker and organizational) and family support. Results of these analyses are presented in Table 2.

Table 1

Descriptive Statistics and Intercorrelations for All Study Variables (N = 101)

Variables	Correlations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age																
2. Household income	-.08															
3. Frequency of shift-schedule changes	-.21*	.17														
4. Hours worked/week	.12	-.06	-.11													
5. Quantitative workload	.15	-.25*	-.16	.05												
6. Child care	-.44**	.00	.14	-.08	-.14											
7. Elder care	.13	-.08	-.05	-.03	.01	.15										
8. Family support	-.11	.11	.15	-.13	.02	-.03	-.05									
9. Co-worker support	-.04	.11	.02	-.09	.15	.07	.10	.19								
10. Organizational responsiveness	-.03	.14	.05	-.30**	-.22*	-.08	-.10	.20*	.39**							
11. Time-based WIF	.06	-.19	-.02	.24*	.06	.19	-.04	-.17	-.17	-.36**						
12. Strain-based WIF	.15	-.12	-.02	.21*	.27**	.00	-.03	-.18	-.21*	-.37**	.61**					
13. Time-based FIW	-.02	-.06	-.06	-.00	-.00	.19	.00	-.18	-.04	-.16	.40**	.39**				
14. Strain-based FIW	-.08	-.01	.12	.07	-.06	.28**	-.00	-.26**	-.08	-.24*	.45**	.53**	.71**			
15. Stress	.12	-.17	-.05	.01	.31**	-.02	.17	-.15	-.21*	-.38**	.48**	.69**	.47**	.55**		
16. Job satisfaction	-.03	.20*	.01	-.04	-.28**	.14	-.09	.18	.39**	.41**	-.12	-.15	-.03	-.06	-.32**	
Mean	43.5	7.3	1.6	31.4	12.0	63.5	34.9	26.7	30.3	22.4	9.9	11.8	7.5	9.8	27.7	54.1
SD	5.3	2.4	1.7	12.0	2.8	29.5	16.3	6.1	4.3	4.4	2.6	2.6	2.0	2.5	5.0	7.2

Notes: * $p < .05$; ** $p < .01$

Table 2

Hierarchical Regression Analyses for Work-Family Conflict, Stress, and Job Satisfaction: Standardized Beta Weights (β)

Variable/Step	Work Interferes with Family		Family Interferes with Work	
	Time-Based	Strain-Based	Time-Based	Strain-Based
Step 1: Demographic Variables				
Age	.16	.14	.06	.04
Household income	-.14	.00	-.03	-.00
R^2_{change}	.04	.03	.00	.01
Step 2: Job-Related Variables				
Hours/week	.14	.10	-.04	.00
Quantitative load	-.02	.24*	-.06	.12
Work-schedule change	.03*	.08	-.04	-.07
R^2_{change}	.05	.09*	.00	.02
Step 3: Caregiving Variables				
Child care	.26*	.09	.21*	.25*
Elder care	-.13	-.07	-.07	-.08
R^2_{change}	.07*	.01	.04	.07*
Step 4: Support Variables				
Co-worker support	-.02	-.13	.05	.05
Family support	-.05	-.10*	-.14	-.23*
Org. responsiveness	-.27*	-.21*	-.16	-.22*
R^2_{change}	.08*	.10*	.04	.09*
Overall R^2	.24**	.23**	.08	.19*

Notes:* = $p < .05$; ** = $p < .01$; $N = 101$

Table 2 (cont'd)
Hierarchical Regression Analyses for Work-Family Conflict, Stress, and Job Satisfaction: Standardized Beta Weights (β)

Variable/Step	Stress	Job Satisfaction
Step 1: Demographic Variables		
Age	.05	.13
Household income	-.04	.07
R^2_{change}	.04	.04
Step 2: Job-Related Variables		
Hours/week	-.10	.07
Quantitative load	.26*	-.27*
Work-schedule change	.04	-.08
R^2_{change}	.07*	.06*
Step 3: Caregiving Variables		
Child care	-.02	.19
Elder care	.14	-.13
R^2_{change}	.02	.03
Step 4: Support Variables		
Co-worker support	-.15	.32*
Family support	-.08	.11
Org. responsiveness	-.27*	.22*
R^2_{change}	.13*	.23*
Overall R^2	.26**	.36**

Notes:* = $p < .05$; ** = $p < .01$; N = 101

Time-Based WIF

Collectively, the predictors accounted for 24% of the variance in time-based WIF. Both the caregiving and support variables accounted for significant portions of this dimension of work-family conflict. Specifically, having children under the age of 19 living at home was associated with increased time-based WIF. In addition, nurses who felt that their employer was responsive to employees' family demands reported less time-based WIF.

Strain-Based WIF

The predictors of strain-based WIF show evidence of domain relevance, reflected by the significant contribution made by the variables in the

workplace and support blocks. Specifically, of the total 23% of the variance accounted for by all the predictor variables, the greater the quantitative workload (the perception of having too much to do) and the lower perceived organizational and family support, the more strain-based WIF was experienced.

Time-Based FIW

None of the sets of variables considered here made a significant contribution to the prediction of time-based FIW. However, one variable, the amount of assistance provided to children under the age of 19 who lived at home, was positively associated with time-based FIW.

Strain-Based FIW

Nineteen percent of the variance in strain-based FIW was accounted for by the entire set of predictors. Like strain-based WIF, it was predicted by the two blocks of variables most relevant to this outcome – namely, the caregiving and the support blocks. That is, the more assistance provided to children under the age of 19, the more strain-based FIW. In addition, the more satisfied the nurses were with the support they received from their families, and the more they perceived their employer as responsive to their homelife, the less strain-based FIW they experienced.

Stress

Of the total 26% of the variance in stress that was accounted for by all the predictors, the work-related and support variables proved to be the critical determinants of this outcome. Not surprisingly, quantitative workload predicted (greater) stress, whereas organizational responsiveness to family life was inversely associated with stress.

Job Satisfaction

Job satisfaction was also predicted by both the work-related and support variables. Nurses who felt they had too much to do were less satisfied with their jobs. The more they perceived their co-workers as supportive and the more they viewed their employer as responsive to their family demands, the more satisfied they were with their jobs. As a set, the predictors accounted for more of the variance (36%) of this outcome than of the other.

Discussion

The results of this study underscore the importance of distinguishing between the direction and bases of the conflict between work and family, among nurses, revealing that the four kinds of conflict have somewhat different determinants. Specifically, the findings reveal that time-based conflict, whether from work to family or from family to work, arises largely from caring for children. Hence nurses who reported providing a greater amount of assistance to their children experienced more time-based WIF and FIW. In addition, the determinants of strain-based conflict show evidence of substantive and domain relevance. Specifically, nurses who feel they have too much to do on the job are more likely to have thoughts and feelings generated at work intrude on their home lives, whereas nurses who provide a large amount of assistance to their children are more likely to experience mental and emotional spill-over from the family domain to the work domain.

The support variables show more limited evidence of domain specificity. The findings reveal that nurses who are relatively satisfied with the practical and emotional support they enjoy from their families are less likely to be preoccupied at work with concerns and distracted by negative moods that arise from family demands. In contrast, co-worker support did not show any predictive power across the four types of work-family conflicts. Instead, for three of the four types of work-family conflicts, the more nurses perceived their employer as supportive of their home lives, the less conflict they experienced.

It is noteworthy that elder care did not predict any of the outcomes. This finding is probably a reflection of the fact that the average age of the nurses was 43.5 years, placing them at a developmental stage that is earlier than the time when more onerous filial elder-care responsibilities normally are assumed (Martin-Matthews & Rosenthal, 1993; Rosenthal, Matthews, & Marshall, 1989). Descriptive data reveal that the respondents spent an average of only 3.9 hours per week ($SD = 8.75$, range = 1-60) assisting one or more elderly relatives, whereas they devoted an average of 29.8 hours per week ($SD = 29.9$, range = 1-168) to child care.

The finding for co-worker support is more puzzling and intriguing. Contrary to the finding of Ross et al. (1994), based on their interviews with nurses, that family support exceeded workmate support, the present study documents higher mean ratings of co-worker support ($M = 30.3$, $SD = 4.3$) than family support ($M = 26.7$, $SD = 6.1$). However,

the emotional and practical aid of other nurses was not found to affect either WIF or FIW, nor to predict stress. It is only with respect to job satisfaction that it shows predictive power. Considered together, these findings suggest that co-worker support affects morale at work but has little bearing on the integration of work and family duties.

Of all the predictive variables, only the subjective perception of having too much to do proved to be a salient precursor of stress, job *dis*satisfaction, and strain-based WIF. These pervasive negative consequences may represent the psychological effects of nurses' lack of control over their work. That is, only when nurses perceive that they have too much to do in too little time at work do their job demands result in adverse effects such as having workplace concerns penetrate their home lives. In short, when nurses feel they have too much to do, their sense of mastery can be undermined, contributing to disaffection with their jobs and adding to the feelings of disillusionment with their chosen career that stem from conflict between their personal values and the values espoused by the health-care system (Oberle & Davies, 1993).

Finally, it is evident that nurses who perceive their employer as supportive of family life experience less time-based and strain-based WIF, suggesting that the norms, policies, and attitudes toward home life communicated by supervisory personnel and senior management are far more consequential than the support of co-workers. This means that a more "family-friendly" employment environment may mitigate unwanted spill-over from work to family life. It would be instructive for research to assess the determinants of perceived organizational support for family, including both the informal or unwritten rules that govern corporate responses to work-family conflicts, and existing family-friendly services and programs. How does a culture of support for family arise, and what are the dividends that accrue to employers who place a premium on and reward managerial flexibility? Should employers take steps to lighten employees' family responsibilities by introducing a range of substitute-care arrangements (e.g., emergency child care, day care), or should they make it easier for employees to manage their dependent-care obligations – by introducing more flexible work arrangements, for example?

Although generally the social-support variables proved to be important predictors of the several outcomes examined here, it would also be valuable if future investigations explored the kinds of personal coping strategies that nurses use to manage their dual role. Such information would yield new insights about how women cope with the chronic stress that attends fulfilling multiple social roles (Gottlieb,

1997). As well, the inclusion of coping data could add more power in predicting the extent and the type of work-family conflict they experience. On the former score, it would be enlightening to know whether certain kinds of cognitive strategies of coping – such as distancing, lowering standards for job performance or for housekeeping, or downward social comparisons – prove efficacious as ways of meeting the challenge of balancing job and family demands. It would also be instructive to learn about the steps that women take to prevent work-family conflicts from arising in the first place, and to compare the actual and anticipatory coping responses of women who have had to terminate their employment due to work-family conflict with those who have found ways to harmonize the two spheres. Finally, by marshalling data about individual coping efforts and social support in both the workplace and the home, it may be possible to determine the extent to which certain kinds of support are contingent on certain ways of coping, as well as the constraints on coping that arise from interactions with family members and co-workers. For example, it is possible that family support is contingent upon the ability to work out compromises and to make accommodations that maintain family cohesion and harmony.

Although these results underscore the value of distinguishing between time-based and strain-based conflict, researchers may wish to explore more fully the determinants and the components of these two sources of conflict. For example, little is known about the actual situations that lead to each type of conflict. Is there something about the structure of nurses' work, or about management practices, that generates more or greater conflict between work and family life than in other professions in which women are engaged? Perhaps comparative studies of nurses in various settings and roles, such as in community-based work and in hospital settings, would illuminate the factors that are implicated in the genesis of work-family conflicts. In addition, it would be valuable to know which aspects of strain-based conflict – whether thoughts, moods, or energy depletion – are stronger determinants of the outcomes examined here, as well as other outcomes. For example, is it mainly the negative moods produced by work that affect nurses' relationships with their spouses and children? To what extent do intrusive thoughts about the well-being of dependents affect perceived stress and thereby reduce organizational commitment? These and other inquiries into the impacts of certain aspects of strain-based conflict would also clarify how conditions at work and at home could be altered to minimize their adverse psychological sequelae.

In closing, it must be acknowledged that the present study is limited by virtue of its cross-sectional design and the data's grounding

in a relatively small sample of hospital-based nurses. The former limitation precludes any causal inferences; a prospective design would be required to strengthen conclusions about the factors that place nurses at risk of the several outcomes examined here. The latter limitation, which affects the generalizability of the findings, could be overcome by selecting a larger, representative, sample of nurses drawn from multiple nursing settings and living in a variety of family circumstances. In addition, to examine the impact of elder care more effectively, it would be desirable to recruit older nurses who are at a life stage when they are more likely to have assumed responsibility for the care of an aged relative.

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Acknowledgements

Brief

Teaching and Learning Needs of Culturally Diverse Post-R.N. Students

Judith Kulig and Karran Thorpe

Malgré la nature multiculturelle de notre pays, les écoles canadiennes de sciences infir-mières attirent généralement les femmes blanches de la classe moyenne. La documenta-tion a établi un grand nombre des difficultés que recontrent les étudiants issus de diverses cultures pour ce qui concerne la façon de s'adapter au programme et comment le ter-miner. Les raisons de ces difficultés comportent les différences dans les manières d'ap-prendre, certains étudiants préférant l'apprentissage visuel (Crow, 1993; More, 1989), les différences dans la compétence langagière, surtout pour les étudiants dont l'anglais n'est pas la langue maternelle (Bowker, 1992; Harrison, 1992; Phillips & Hartley, 1990), les dif-férences dans le style de communication (Wax & Thomas, 1961), l'absence de modèle de rôle et de soutien social au sein de leur groupe culturel (Bowker, 1992; Edwards, Smith, & French, 1989; Sedlack, 1983) et un défaut de compréhension de la part du corps enseignant et des autres ètudiants pour ce qui a trait à leur mode de vie, leurs antécédents et leurs croyances (Abu-Saad, Kaysar-Jones, & Gutierrez, 1981; Crow, 1993; Harrison, 1992).

Despite the multicultural nature of our country, Canadian schools of nursing have gen-erally attracted white middle-class females. The literature has identified many of the difficulties culturally diverse students experience in coping with and completing their program. The reasons noted for these difficulties include differences in learning styles, with culturally diverse students preferring visual learning (Crow, 1993; More, 1989); dif-ferences in language aptitude, particularly for those students whose first language is not English (Bowker, 1992; Harrison, 1992; Phillips & Hartley, 1990); differences in communi-cation style (Wax & Thomas, 1961); lack of role models and social support within their cultural group (Bowker, 1992; Edwards, Smith, & French, 1989; Sedlacek, 1983); and a lack of understanding among faculty and other students regarding their lifestyles, back-grounds, and belief systems (Abu-Saad, Kaysar-Jones, & Gutierrez, 1981; Crow, 1993; Harrison, 1992).

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The purpose of this descriptive study was to explore the individual perceptions of students regarding the teaching/learning environment with a view to gaining insights into the influence of cultural backgrounds on student learning and success. The general research question guiding this exploratory, descriptive study was: "What is the influence of cultural background on students' teaching and learning needs?" For the purposes of this project, learning style was defined as "the characteristic or usual strategies of acquiring knowledge, skills and understanding by an individual" (More, 1989, p. 16). However, learning style also incorporates sensory modes and the physical setting (More). The objective was to ascertain the perceptions of the students regarding the teaching/ learning environment.

Data Collection and Analysis

Data were collected through in-depth, semi-structured, tape-recorded interviews focusing on demographics as well as perceptions and ideas related to the student's culture (e.g., upbringing, lifestyle, and knowledge and practice of cultural traditions) and teaching/learning environment (e.g., learning-style preferences, assistance from university personnel and fellow students, learning goals). The time required for each interview was one to two hours. Thirteen participants were interviewed from our post-R.N. program. Focus-group interview sessions were conducted by both researchers at the conclusion of the data-collection process to provide an opportunity to confirm interpretations and offer additional insights.

A thorough analysis and interpretation of the data included having an auditor read half of the transcripts and discuss the generated data with the investigators (Guba & Lincoln, 1981; Lincoln & Guba, 1985, 1986). The demographic data were tabulated to delineate a descriptive profile of the participants.

Findings

The average participant had completed a two-year college program, was currently enrolled full-time in the first year of the baccalaureate program, and was a female of 33.5 years. The sample comprised four aboriginal persons, two Japanese, two Canadians, one French, one Greek, one Jamaican, and one Bahamian.

Three major themes emerged: (1) role models, (2) teaching/learning, and (3) cultural identities.

Importance of role models. Many participants recalled stories about those key individuals who influenced them, with respect to not only education but life in general. Interestingly, grandmothers were noted most frequently as important role models among the culturally diverse participants. The Canadian participants who were Caucasian highlighted the importance of not their grandmothers but their parents. Often, the grandmothers cited as role models had neither formal education nor paid employment, yet they were deemed to be heads of the household as well as central figures in the community. These women were respected in their communities because of their roles and the abilities they displayed. Other individuals identified as role models were aunts or uncles, or, in one case, a registered nurse whom the participant knew. Almost every interview elicited stories of parents defying the odds and succeeding in a society that was predominantly white and in every way culturally alien. In several instances parents had immigrated, learned English, adjusted well to the new cultural milieu, and secured satisfying occupations. Importantly, the parents of all the participants had insisted upon their children succeeding in school.

Teaching/learning styles. For all participants, regardless of cultural background, university education was seen as fostering critical thinking and self-directed learning, whereas college education was seen as concentrating on tasks and memorization. Considering the ethnic diversity of the participants, it is interesting to note that very few could speak the language of their parents; particularly surprising is the fact that the four aboriginal participants could not speak their mother tongue. Students preferred a variety of teaching styles; contrary to the findings of other authors (Crow, 1993; More, 1989), there was no confirmation of a preferred learning style based on cultural background.

Valuing cultural identities. The last theme was important to the participants both as students and as members of society. Some participants had grown up in a milieu in which they were the ethnic majority and had since moved to a society in which they were a distinct minority. Others were raised in a setting in which their ethnic group was a minority. Many individuals experienced overt and covert racism. For example, one participant related having been called a "wagon burner" as a child, because of her aboriginal ancestry. Another participant commented, "I don't think I appreciated being Japanese when I was younger, because when I was younger everybody wanted to be the same. [It was] 'Oh, I want to be white'." Thus, feeling accepted by society and fellow students is paramount to success in society generally, and in educational institutions specifically.

Recommendations

The results of this study have a number of implications for the teaching environment, based on the three themes. Since role models were identified as an important aspect of the participants' lives, incorporation of role models into the academic setting would be one option; for example, guest speakers of various ages and from various cultural backgrounds could enhance the teaching environment.

In addition, faculty should demonstrate positive role-model characteristics. Literature by non-Caucasian nurses should be included on reading lists.

The participants in this study indicated a preference for variety in teaching styles. Faculty members must be prepared to learn about the cultural backgrounds of their students and to embrace diverse teaching styles. A number of authors provide examples of teaching styles that have been effective in post-secondary settings (see Adams, 1992; Martin, 1991; Ognibene, 1992).

Finally, all students need to feel comfortable in the classroom environment. Faculty members must acquire the skills to deal with comments or situations that demonstrate overt or covert racism, such as students exhibiting stereotypical or biased behaviour in class. Exercises can be carried out in the classroom setting to help students come to terms with values that differ from their own (see Jackson, 1993; Larke, Wiseman, & Bradley, 1990). Additional strategies to consider include developing buddy systems for students and having social events such as ethnic potluck suppers to alleviate students' sense of isolation and to enhance understanding among groups.

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Acknowledgement

Video Review

McCaffery on Pain: Nursing Assessment and Pharmacologic Intervention in Adults

Margo McCaffery
Baltimore: Williams & Wilkins Electronic Media, 1992.

Reviewed by Madeleine Buck

Any nurse who has questioned a patient's complaints of pain, who suffers "opiophobia," who does not believe in the use of tools and flow sheets to assess and monitor pain, who wonders how to manage pain in the recovering addicted-to-opioid client, or who seeks to increase the use of research findings in practice *must* view this video series! What makes Margo McCaffery's presentation worth watching is that it not only addresses important ideas about pain that should be generic to every nurse but adds some very practical and scientifically based approaches to working with the client who "hurts."

The four 30-minute videotapes (*Tape 1: Nursing assessment of the patient with pain; Tape 2: The three analgesic groups: Practical considerations; Tape 3: Use of opioid analgesics; Tape 4: Undertreatment of pain*) offer a very nice overview of pain assessment and interventions using pharmacological agents as resources. McCaffery shares her expert knowledge and incorporates results from several research studies throughout to support her ideas. American Pain Society and World Health Organization definitions and guidelines provide the framework throughout. Citing various research studies that indicate that nurses often challenge the patient's assessment of pain, McCaffery provides convincing evidence, through her dialogue and clinical enactments, that would make any nurse think twice the next time he or she had a client who says he has pain but does not "look" as if he does or who says she has no pain but actually does. The theoretical reasons used to explain these behaviours are addressed thoroughly, including such ideas as patients denying pain to protect their family members from worrying or assuming that the nurse would know if they are in pain or not! Viewing the several clinical examples

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where pain assessment tools and flow sheets are used to monitor and manage pain would convince anyone who has not incorporated this approach into their nursing to do so.

Though this is not directly outlined in their titles, the videos address the nurse-client relationship and the role the nurse plays in influencing how pain is managed by other members of the health-care team. Several enactments model some very lovely interactions between nurse and client, demonstrating how a collaborative approach of engaging the "hurter" in the assessment and plan leads to a much more effective outcome. The nurse also demonstrates how to present one's ideas to other health professionals – some relevant ideas for both novice and expert nurse! What makes the videos particularly relevant are the "application" segments that compare and contrast enacted pain scenarios and how they might be managed based on their clinical variations. Of particular interest is the review of "special situations" that includes the client recovering from opioid addiction and the elderly .

The challenge of holding the viewer's attention for two hours was met by using a variety of "learner friendly" approaches. The didactic material is presented orally and visually, but once basic ideas are covered the use of real nurses and patients interacting and comparing nurse and patient presentations and approaches across situations holds one's attention and interest quite well.

Are 1992 materials still relevant? A definite "yes" – though the names of pharmacological agents may have changed, what one will remember from this series are essential tenets of pain assessment and management that are based on solid principles that will stand the test of time. It is unfortunate that the series does not address non-pharmacological approaches to pain management nor the clinical variations in the pediatric population. Even though the series is intended for nurses, it could be of use to other health professionals, and maybe even the patients themselves. This is an excellent tool for students beginning their career in nursing and is of definite value for even the most seasoned of nurses who can be updated or reminded of specific ideas on pain and its impact on the patient.

Call for Papers

Health Promotion
Spring 1997 (vol. 29, no. 1)

The following themes are suggested for this issue: theories and paradigms underlying health-promotion concepts; determinants of health; individual, family, and population approaches adapted to diverse subcultures; health education; empowerment; evaluation of nursing programs in health promotion; and research methods appropriate for this field.

Guest Editor: Dr. Denise Paul
Submission Deadline: October 15, 1996

Developing Family
Summer 1997 (vol. 29, no. 2)

This issue will focus on knowledge needed to provide effective care to contemporary families during the reproductive experience. Preference will be given to completed research that provides new knowledge to guide practitioners caring for families during conception, pregnancy, birth, and postpartum. Both qualitative and quantitative work will be welcome, including research that replicates, refines, or expands previous studies.

Guest Editor: Dr. M. Colleen Stainton
Submission Deadline: December 15, 1996

Please send manuscripts to:

The Editor
Canadian Journal of Nursing Research
McGill University School of Nursing
3506 University Street
Montreal, QC H3A 2A7

Articles à publier

Ce numéro cible le domaine de la promotion de la santé. Les thèmes suivants sont suggérés: théories et paradigmes sous-jacents aux concepts de santé et de promotion de la santé, déterminants de la santé, approches individuelles, familiales et populationnelles adaptées aux diverses sous-cultures, éducation de santé, appropriation (empowerment), évaluation de programmes de soins infirmiers en promotion de la santé et méthodologies de recherche appropriées à ce domaine.

Ce numéro traitera des connaissances exigées pour procurer des soins efficaces aux familles d'aujourd'hui pendant le processus de procréation. La préférence sera donnée aux recherches approfondies procurant de nouvelles connaissances pour guider les praticiens qui dispensent les soins aux familles pendant la conception, la grossesse, la naissance et la post-natalité. Les travaux qualitative et quantitative seront les bienvenus, tout comme ceux qui reproduisent, affinent ou développent les études précédentes.

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DALHOUSIE UNIVERSITY
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The Master of Nursing Program at Dalhousie University is a two-year research-oriented program preparing graduates to demonstrate leadership in nursing. Following completion of core classes which include advanced preparation in clinical nursing, students choose one of the following three streams:

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Clinical practica are offered in a wide variety of specialty areas with children, adults, families, and communities. These areas vary from year to year. Prospective applicants are encouraged to consult the School of Nursing to identify specific clinical offerings in any academic year. Elective classes may be chosen from a variety of fields.

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Applicants must have a Bachelor's degree, satisfy the general requirements for admission to the Faculty of Graduate Studies, and be licensed to practise as a registered nurse (active practitioner) in a province in Canada or in a foreign country. Admission is based on assessment of professional experience, previous academic work, letters of reference, GRE and TOEFL (for visa students). A personal interview with the Coordinator of the Graduate Program, Nursing, or the faculty member teaching the desired clinical option is recommended.

The Faculty of Graduate Studies is committed to increasing the number of students from under-represented groups in its programs. In the Faculty, affirmative action means giving all academically qualified applicants careful consideration without bias.

For further information about the Master of Nursing Program, please contact the Associate Director, Graduate Program, School of Nursing, Dalhousie University, Halifax, NS B3H 3J5.

The University of Western Ontario
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The University of Western Ontario Faculty of Nursing invites applications for full-time (12 months) tenured or tenure track positions with teaching duties and related research in family-centred nursing, care of elderly persons, and advanced nursing practice. Teaching will include supervision of masters student research and special projects. Applicants should be eligible for registration with the College of Nurses of Ontario. An earned doctorate in nursing or a related field and demonstrated skill in teaching are required. Rank is open and dependent upon qualifications and experience. Applications will be accepted until positions are filled for July, 1997. Positions are subject to budget approval.

The University has a total enrolment of more than 22,000 full-time students in graduate, undergraduate and professional programs. It is located in London, a city equidistant from Detroit and Toronto. Excellent opportunities exist for educational, administrative, and clinical research with an extensive network of cross-appointed faculty from regional health care agencies. Send curriculum vitae and names of three referees to:

Dr. Lillian Bramwell, Dean
Faculty of Nursing
The University of Western Ontario
London, Ontario
N6A 5C1

Telephone: (519) 661-3399
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For further information contact:

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Fax: (519) 973-7084

University of New Brunswick
Saint John Campus

NEW NURSING PROGRAMS

In the fall of 1995, the Department of Nursing on the Saint John Campus of the University of New Brunswick admitted its first students to a Baccalaureate (Basic) Nursing Degree Program, collaborated with the Faculty of Nursing at UNB Fredericton on a new MN Program and continued its decade-long involvement in the BN/RN Program. The number of Nursing faculty positions doubled and will continue to grow considerably over the next 3 years. If you find the challenges associated with these Nursing initiatives exciting, the Department of Nursing at UNBSJ is anxious to hear from you!

Current Opportunity: Applications are invited for a full-time probationary tenure track position in Nursing. The primary responsibilities associated with the position will be curricular development and teaching in the first and second years of a BN (Basic) Program. Expertise in primary prevention, community development and prior work with adolescents and young adults would be an asset in view of the particular courses to be developed for the Program. Opportunities to teach in the MN Program and in distance education are also available. An established research program with particular expertise in quantitative methods will be advantageous. A PhD is required; at least one graduate degree must be in Nursing. Preference will be given to candidates with prior university teaching experience. The appointment, subject to final budgetary approval, will commence on December 1, 1996.

Applications: Send a curriculum vitae and the names of three referees no later than October 10, 1996, to Dr. C.K. Tompkins, Dean of Science, Applied Science & Engineering, The University of New Brunswick, P.O. Box 5050, Saint John, NB E2L 4L5. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. The University of New Brunswick is committed to the principle of employment equity.

Future Opportunities: As subsequent years of the BN (Basic) Program unfold, additional tenure track positions will become available. Those positions are anticipated to begin on July 1, 1997, and July 1, 1998. If you are currently a PhD candidate or are seeking a new academic appointment, we welcome inquiries about future positions.

DEAN, SCHOOL OF NURSING

The University of Lethbridge invites applications for the position of **Dean of Nursing.**

The Dean provides leadership in the development of teaching, research and service in a time of rapid change in health care. The Dean works within a smaller university, committed to excellence in liberal education for undergraduate students and is responsible to the Vice-President (Academic) for the leadership and administration of the School of Nursing.

The School of Nursing, with a staff of seven full-time, continuing instructors, is one of five faculties and schools on a campus of about 4800 undergraduate students and a limited number of graduate students. The School is committed to the development of the nursing profession and offers three programs: a two-year post diploma program, a four-year Baccalaureate program in nursing and a four-year Bachelor of Health Science (Addictions) program. The school has a collaborative relationship with Medicine Hat College and Lethbridge Community College. Further, the University and the School of Nursing are in the process of implementing newly-funded programs. A federally-funded Centre of Excellence in Health Promotion Research and Community Studies is housed within the School. The Centre provides an opportunity for cross-disciplinary research involving other faculties in the University and collaboration with a wide range of health and other agencies within the community.

The degree program offers the opportunity to emphasize nursing education for rural settings, the study of issues related to nursing in First Nations communities and gerontology. The Post RN Baccalaureate program offers three focus areas for students: 1) health education, 2) community health, and 3) nursing management. Undergraduate student practicums have been successfully completed at locations around the world.

The successful applicant will be someone who is an RN (eligible for registration with the AARN) and has a degree in either nursing or a related subject area. In addition, an earned doctorate, or equivalent (ideally in Nursing) is expected. Through proven teaching ability and a strong record in scholarship and research, as well as in administrative ability, the successful candidate would be eligible for tenure at the rank of Full Professor.

This is a five-year renewable term position beginning July 1, 1997 or by agreement. Applications, including detailed curriculum vitae, should be received **by October 15, 1996.** Direct applications or nominations to:

Dr. Howard Tennant, President and Vice-Chancellor,
The University of Lethbridge, 4401 University Drive, Lethbridge,
Alberta, T1K 3M4, Phone: (403) 329-2201, Fax: (403) 329-2097.
E-mail TENNANT@HG.ULETH.CA
U of L home page: http://www.uleth.ca

The University of Lethbridge is an equal opportunity employer and offers a non-smoking environment. In accordance with Canadian immigration requirements, first preference will be given to Canadian citizens and permanent residents of Canada.

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Information for Authors

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Procedure: Three double-spaced typewritten copies of the manuscript on 8 ½" x 11" paper are required. Articles may be written in French or English. Authors are requested not to put their name in the body of the text, which will be submitted for blind review. Only unpublished manuscripts are accepted. A written statement assigning copyright of the manuscript to *The Canadian Journal of Nursing Research* must accompany all submissions to the journal. Manuscripts are sent to: The Editor, *The Canadian Journal of Nursing Research*, McGill University, 3506 University Street, Montreal, QC H3A 2A7.

Manuscripts

All manuscripts must follow the fourth edition of the *Publication Manual of the American Psychological Association*. Research articles must follow the APA format for presentation of the literature review, research questions and hypotheses, method, and discussion. All articles must adhere to APA guidelines for references, tables, and figures. Do not use footnotes.

Title page: This should include author name(s), degrees, position, information on financial assistance, acknowledgements, requests for reprints, address, and present affiliation.

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Text: The text should not exceed 15 double-spaced typed pages. References, tables, and figures should follow the text.

References: The references are listed in alphabetical order, double-spaced, and placed immediately following the text. Author names and journal citations must be spelled out in full.

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Review process and publication information: *The Canadian Journal of Nursing Research* is a peer-reviewed journal. Manuscripts are submitted to two reviewers for blind review. The first author will be notified following the review process, which takes approximately 12 weeks to complete.

Electronic copy: Authors must provide satisfactory electronic files of the accepted final version of the manuscript.

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La revue canadienne de recherche en sciences infirmières paraît quatre fois par année. Son mandat est de publier la recherche en sciences infirmières qui développe les connaissances de base dans la discipline et qui analyse la mise en pratique de ces connaissances. La revue accepte aussi des articles de recherche reliés à l'enseignement, l'histoire, et accueille des articles ayant trait à la méthodologie, la théorie, et l'analyse qui promouvoir le développement des sciences infirmières. Les soumissions de lettres et de commentaires sur des articles publiés sont aussi encouragées.

Modalités: Veuillez envoyer trois exemplaires de votre article dactylographié à double interligne sur des feuilles de papier de 216mm x 279mm. Il est entendu que les articles soumis n'ont pas été simultanément présentés à d'autres revues. Veuillez inclure avec votre article une déclaration de propriété et de cession de droit d'auteur.

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Tous les manuscrits doivent se conformer à la quatrième édition du *Publication Manual of the American Psychological Association*. Les articles de recherche doivent suivre les consignes énoncées dans le « APA » en guise de présentation de la littérature, des questions de recherche et d'hypothèses, de la méthode, et de la discussion. Tous les articles doivent obéir au manuel « APA » pour les références, les tableaux, et les schémas. N'employez pas de notes au bas de la page.

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