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Continuity and Change: Setting the Direction for the Next Five Years

Over the years I have learned how important it is to maintain the delicate balance between continuity and change. Continuity provides important links with the past, whereas change shapes the future. By adhering to continuity we run the risk of becoming dated, unresponsive to changing needs. On the other hand, by responding to every demand or every new trend we risk becoming faddish.

With this issue, the *Canadian Journal of Nursing Research* begins its 31st year of publication. This issue also marks the passing of seven years of my editorship and the completion of five years of focus issues. In planning for the next five years, Dr. Anita Gagnon, the newly appointed Assistant Editor, and I reviewed all aspects of the Journal's operations with an eye to what to continue and what to change.

When I assumed the editorship, I invited Dr. Mary Grossman to serve as Associate Editor. Together, we revamped the Journal and set it on a new course. We were committed to the original mission of a scholarly journal promoting the exchange of ideas. To formalize this objective, we created the section called Discourse, in which renowned scholars were invited to challenge conventional wisdom and put forth new and, at times, unorthodox ideas. We agreed that the *CJNR* should remain a broad-based scholarly journal, but we recognized the need for greater focus. Thus we continued to publish a wide range of research while at the same time introducing focus issues. We drew upon the talents of well-established nurse scholars to serve as guest editors. Judging from the feedback we have received over the years, these directions have served the nursing community well, and they will be continued.

In planning for the next five years we have again committed to the format of publishing research articles on a wide range of topics as well as devoting a portion of each issue to a focus topic. After discussing what topics to feature, we have concluded that many of those presented during the past five years are as relevant now as when they were published. In considering which topics to retain and which new ones to

introduce, we examined the societal and health-care trends that are shaping and will continue to shape the health-care system and the development of nursing. We decided to retain topics such as Chronicity, Coping/Adaptation, Culture & Gender, Gerontology, Health Promotion, Philosophy/Theory, and Women's Health. Some topics, such as Alternative Treatment & Symptom Management and Ethics, Values, & Decision-Making, we decided to broaden, while Nursing-Care Effectiveness we have repackaged to focus on new and future trends in the area. The new selection of topics includes: Abuse & Violence, Addiction, Economics of Nursing Care, Health Resources Planning, Home Care, International Nursing, Mental Health, Continuity & Transitional Care, Primary Health Care, and Research Utilization.

One of the most rewarding aspects of this position has been the opportunity to work closely with the guest editors. During the past five years I have collaborated with 20 guest editors. Although each of them has been unique in style and approach, they have all shared many qualities — a pioneering spirit, a willingness to experiment and try new things, a commitment to excellence and rigour, and a passion for nursing. Moreover, there has been a shared sense of humour and sense of fun. As for continuity and change, Dr. Judith Ritchie and Dr. Gina Bohn Browne have agreed to continue as guest editors, while 18 new scholars have been invited to participate; each has accepted our invitation with great enthusiasm.

As we move into our 31st year, I once again invite the *CJNR* readership to help shape the direction of the Journal. We want to have your opinion on what to continue, what to change, and what to feature that is new. It is through the delicate balance of continuity and change that the *CJNR* will continue to make an impact on nursing and on health care.

Laurie N. Gottlieb
Editor

GUEST EDITORIAL

Moving Research Utilization into the Millennium

Heather F. Clarke

What a wonderful opportunity: to be guest editor for the first issue of the next 30 years of the *Canadian Journal of Nursing Research* — and setting the foundation for entering the new millennium!

With all opportunities, however, come challenges. While *dissemination* and *research utilization* are everyday terms for many nurses, they are still primarily conceptual and lack operational detail for end-users in clinical practice, education, administration and management, and policy-making. It is only in the past 30 to 40 years that attention has been explicitly directed to explaining factors that affect coordination of research and decision-making in these contexts, and this primarily with respect to the medical profession. The nurse authors of the articles in this seminal issue of the Journal have helped our profession achieve greater theoretical understanding of dissemination and research utilization and have proposed frameworks and models to test these processes. They are leaders in expanding this focus in nursing and research.

Alison Kitson challenges nurses to develop robust theoretical frameworks that are multidimensional, rather than linear, and capable of being tested in part as well as in whole. The "blind spots" in our current state of knowledge relate to the nature of knowledge, the diffusion and utilization processes, the influence of context, and the role of agent of change or facilitator. Such insight should help to set the agenda in research on dissemination and research utilization in nursing.

Carole Estabrooks provides a comprehensive and critical review of the research utilization field in nursing, expanding upon and confirming Kitson's challenges. Evidence-based practice provides the springboard for Estabrooks to make a significant contribution to the field of research utilization, mapping it, identifying its foundations, and describing the factors that influence research utilization and outcomes. She proposes a set of priorities, which are consistent with those of

Kitson, to expand the work in this field. Estabrooks challenges us to conduct studies and support programs that are identified on the map, in collaboration with appropriate partners, to advance the field of research dissemination and utilization.

Judith Floyd, using sleep research as an example, describes how the nature of the knowledge might be better presented so that clinicians will be encouraged to use research in their practice. Donna Ciliska and colleagues evaluate the acceptability of using different formats for disseminating systematic reviews to decision-makers in the public-health system. Gina Bohn Browne, in Happenings, provides a powerful model illustrating the importance of alliances between researchers and policy-makers, planners, and providers and increasing our knowledge about the diffusion and utilization processes. Jo Logan and colleagues describe the Ottawa Model of Research Use, which addresses the blind spots identified by Kitson in implementing evidence-based pressure-ulcer practice.

Given the concepts these authors identify as important, it is disappointing to learn that one of the few books with a title suggesting research utilization gives so little attention to the subject. France Bouthillette, in her review, notes that only one of three parts of *Reading, Understanding, and Applying Nursing Research* is focused on research utilization, and it has significant limitations. Clearly, we have a whole new research field to explore — research on research utilization — gathering evidence that will guide our use of research with a view to improved decision-making, planning, and health for Canadians.

It is critical that we publish our research in peer-reviewed journals. Many of the works cited in the articles published in this issue of the Journal are unpublished reports and literature reviews. Knowledge about the link between the theories of dissemination and utilization needs to be developed and tested. While we must always be cognizant of the multidisciplinary context in which nurses disseminate and use research, and thus develop frameworks and theories that can be translated and tested by other disciplines, it is important that the issue be addressed from a nursing perspective. Not only are there differences in how nurses and other health-care providers make decisions; there are also differences in the variables in Kitson's theoretical framework and Estabrooks's map — differences that must be addressed in professionally specific approaches.

Our approach to the study of research utilization must balance two fundamental values: excellence and relevance. Excellence is the strict adherence to a series of research rules that give objective validity to the

results. Relevance is the ability of research to take on problems that require a solution. Excellence is most often emphasized by scientists, while relevance tends to be emphasized by decision-makers, including clinicians (Frenk, 1992). As we move into the new millennium we are challenged to find this balance and elevate the evidence of research utilization through critical analysis, research, and thinking outside the box. Donabedian (1986) has written: "The world of ideas and the world of action are...inseparable parts of each other. Ideas, in particular, are the truly potent forces that shape the tangible world. The man and woman of action have no less responsibility to know and understand than does the scholar." We are challenged to proclaim, push, pull, and participate — moving research utilization into the new millennium!

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L'intégration de la recherche : le passage vers le prochain millénaire

Heather F. Clarke

Quelle merveilleuse occasion : participer en tant que collaboratrice spéciale du premier numéro des prochaines 30 années de la *Revue canadienne de recherche en sciences infirmières*, et mettre en place la fondation qui servira de tremplin pour le nouveau millénaire !

Toutefois, avec les occasions viennent aussi les défis. Bien que *diffusion* et *intégration de recherche* sont des termes que beaucoup d'infirmières utilisent quotidiennement, ils demeurent d'abord et avant tout conceptuels et ne comportent pas de données fonctionnelles destinées au personnel utilisateur œuvrant dans les milieux de la pratique clinique, de l'éducation, de l'administration et de la gestion, ainsi que dans les sphères décisionnelles. Ce n'est que depuis les 30 à 40 dernières années que des efforts sont explicitement exercés pour cerner les facteurs influant sur la coordination de la recherche et la prise de décision dans ces contextes, et cela principalement en rapport à la profession médicale. Les infirmières-auteures des articles publiés dans ce riche numéro de la Revue ont participé à la démarche qui a permise à notre profession d'acquérir une plus grande compréhension théorique en ce qui a trait à la diffusion et à l'intégration de la recherche, en plus de proposer des cadres de travail et des modèles pour mettre ces processus à l'épreuve. Elles sont des chefs de file qui ont favorisé l'expansion de ce créneau des sciences infirmières et de la recherche.

Madame Alison Kitson invite les infirmières à élaborer de solides cadres de travail théoriques, lesquels pourraient être davantage multidimensionnels plutôt que linéaires et se prêter à une évaluation autant dans leurs composantes que dans leur tout. La nature de la connaissance, les processus de diffusion et d'intégration, l'influence contextuelle et le rôle de l'agent de changement ou de la personne responsable, voilà les « angles morts » de notre corpus de connaissance actuel. Une telle analyse doit contribuer à établir l'ordre du jour quant à la

recherche sur la diffusion et l'intégration de la recherche dans notre domaine.

Madame Carole Estabrooks offre une critique globale du domaine de l'intégration de la recherche en pratique infirmière, tout en élaborant et en confirmant les défis posés par madame Kitson. La pratique fondée sur la collecte de preuves fournit à madame Estabrooks le tremplin qui lui permet d'effectuer une importante contribution dans le domaine de l'intégration de la recherche. Elle élabore un schéma du domaine, dont elle identifie les fondements, tout en décrivant les facteurs influant sur l'intégration et les résultats. Elle propose aussi un ordre de priorités quant à l'approfondissement des travaux dans ce domaine, lesquelles sont conformes à celles établies par madame Kitson. Madame Estabrooks nous invite à mener des études et à appuyer des programmes qui sont identifiés dans le cadre du schéma, en collaboration avec des partenaires pertinents, dans le but de favoriser l'avancement de la diffusion et de l'intégration de la recherche.

Utilisant la recherche menée dans le domaine du sommeil, madame Judith Floyd décrit comment le savoir peut être mieux présenté pour inciter les cliniciennes à utiliser la recherche dans leur pratique. Madame Donna Ciliska et collègues évaluent l'acceptabilité de l'utilisation de différents formats pour diffuser les révisions systématiques auprès des décideurs du système de santé publique. Dans le cadre de la rubrique *L'Événement*, Madame Gina Bohn Browne présente un modèle de grand intérêt illustrant l'importance des alliances entre les chercheuses et les décideurs, planificateurs et pourvoyeuses, et l'importance d'approfondir nos connaissances des processus de diffusion et d'intégration. Madame Jo Logan et collègues décrivent le modèle d'intégration de recherche d'Ottawa, lequel traite des « angles morts » identifiés par madame Kitson quant à la mise en place d'une pratique traitant les plaies de pression, qui s'appuie sur l'existence de preuves.

À la lumière des concepts identifiés comme étant importants par ces auteures, il est décevant de constater que l'un des rares livres dotés d'un titre faisant référence à l'intégration de la recherche possède si peu de contenu sur le sujet. À la rubrique *Critique de livres*, madame France Bouthillette note que sur les trois parties du livre *Reading, Understanding, and Applying Nursing Research*, seulement une seule traite principalement de l'intégration de la recherche, et ce avec d'importantes lacunes. Il est évident qu'il s'agit là d'un tout nouveau créneau de recherche à explorer. L'étude de l'intégration de la recherche nous permettra d'amasser des preuves qui guideront notre usage de la

recherche, en vue d'améliorer la prise de décision, la planification et la santé des Canadiennes et des Canadiens.

La publication de nos recherches dans des revues révisées par des pairs constitue une démarche vitale. Un grand nombre des travaux cités dans les articles publiés dans ce numéro de la Revue sont des rapports non publiés et des critiques littéraires. La connaissance des liens entre les théories de la diffusion et les besoins en matière d'intégration doit être approfondie et soumise à l'épreuve. Bien que nous devons toujours tenir compte du contexte multidisciplinaire dans lequel les infirmières diffusent et intègrent la recherche, ce qui nous amène à élaborer des théories et des cadres de travail qui peuvent être traduits et soumis à l'épreuve dans d'autres disciplines, il est important d'aborder la question à partir du point de vue de la profession. Non seulement existe-t-il des différences quant à la manière dont les infirmières et les autres pourvoyeurs de soins prennent les décisions, mais il existe aussi des différences en ce qui a trait aux variables contenues dans le cadre de travail théorique de madame Kitson et le schéma de madame Estabrooks, des différences qui doivent être abordées à la lumière d'approches professionnelles spécifiques.

Notre approche de l'étude de la diffusion de la recherche doit mettre en équilibre deux valeurs fondamentales : l'excellence et la pertinence. L'excellence s'obtient en adhérant à une série de règles régissant la recherche, lesquelles confèrent aux résultats une validité fondée sur l'objectivité. La pertinence se définit comme la capacité de la recherche à s'attaquer à des problèmes qui requièrent une solution. L'excellence est le plus souvent mise d'avant par les scientifiques, alors que les décideurs, y compris les cliniciennes (Frenk, 1992) mettent l'accent sur la pertinence. Nous sommes présentement aux portes d'un nouveau millénaire et nous devons relever le défi, celui de trouver cet équilibre et d'assurer la qualité des résultats des études effectuées sur l'intégration de la recherche, et ce par le biais d'analyses critiques, de recherches et d'une exploration de sentiers inconnus. Madame Donabedian (1986) écrivait : « Le monde des idées et le monde de l'action sont... des parties inséparables l'une de l'autre. Les idées, notamment, constituent des forces d'une grande puissance qui façonnent le monde matériel. La femme et l'homme d'action ne détiennent pas moins la responsabilité d'accéder à la connaissance et la compréhension que les chercheurs. » Nous avons un défi, celui de proclamer, pousser, tirer et participer, bref, celui d'assurer l'intégration de la recherche au cours du prochain millénaire !

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Discourse

Research Utilization: Current Issues, Questions, and Debates

Alison Kitson

The prejudice of research training is always a certain "trained inca-pacity": the more we know about how we do something, the harder it is to learn to do it differently. — Kaplan (1964)

Introduction

What is apparent in both the study and the application of research uti-lization principles and methods is that it is a social process. Our under-standing of research utilization has been profoundly influenced by the body of knowledge around diffusion of innovations (Rogers, 1995), and studies informing its theoretical underpinnings have come from such diverse disciplines as rural sociology, communications, marketing and managing, health promotion, and medical sociology. There has been an exponential growth in the number of publications in the area (Rogers) and, equally significant, a widening of the theoretical perspectives from which it is viewed. Diffusion research itself has followed the pattern of the innovations it describes: early adopters developing new ideas and methods which in turn are taken up by more members of the research community. What is still not clear, however, is the amount of theoreti-cal overlap between diffusion research and such issues as research uti-lization, research implementation, or, most recently, evidence-based practice (Estabrooks, 1998).

Public-health, medical-sociology, and nursing studies around dif-fusion research and research utilization have been, until recently, modest in both number and influence. The first wave of utilization

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research studies in nursing coincided with a period of major growth in diffusion research generally (Horsley, Crane, Crabtree, & Wood, 1983). The current wave of interest seems to have been prompted by a number of closely related issues. These include: the ongoing debate on how to guarantee a quality service, in terms of both value for money and clinical effectiveness; the significant impact of the movement for evidence-based practice (medicine) on how professionals make clinical judgements; changes in health policy around public involvement in health and professional accountability and remuneration of services proven to be both clinically and cost effective.

There is growing awareness around each of the above trends within the international health community. Changes that have taken place in the United Kingdom around evidence-based practice (Kitson, 1997; Sackett, Rosenberg, Gray, & Haynes, 1996), quality improvement (Leatherman & Sutherland, 1998; NHS Executive, 1996), and broader health policy (Department of Health, 1997) indicate that understanding and being able to influence the speed with which positive changes are introduced into complex systems is a good thing. What is less often debated are the power and control mechanisms already in place in such systems, and the prevailing ideologies or paradigms that determine how problems are identified and investigated and emerging solutions offered. This may be an unintended consequence of diffusion research, where until recently researchers have been more concerned with the mechanics of influencing change than with reflecting upon some of the deeper theoretical, philosophical, and ideological issues that at some stage need to be addressed.

With the accumulation of more evidence on research utilization, we need to recognize our theoretical and methodological blind spots and move from taking comfort in the certainties derived from simplistic reductionist approaches to acknowledging the assumptions, biases, and weaknesses that characterize most of our scientific investigations. The uncertainties of research utilization may make us feel overwhelmed by the complexity and messiness of the job; however, other disciplines are beginning to report unintended consequences of successful innovation and the potentially destabilizing impact that "decontextualized" change can have on local communities. These are important findings that ought to be informing how we structure the next phase of our investigations into research utilization.

It would seem that the key elements needing further exploration are:

- the nature of the new knowledge/research/evidence/innovation being introduced;

- what we know about the diffusion/utilization process itself;
- how the context influences the uptake of the innovation;
- the role of the change agent/facilitator in this process.

These elements form the building blocks of our understanding of research utilization (Figure 1). Each element in itself represents a discrete area of scientific investigation. The real challenge for research utilization studies is to develop sufficiently robust theoretical frameworks to enable us to begin to test different parts of the whole process in a systematic, replicable, robust way.

The Nature of Evidence

Variously described as an innovation, new idea, new technology, research finding, and, most recently, evidence, that which gets put into practice has to stand up to scrutiny. Traditionally, the development of scientifically derived knowledge has followed a classical linear, rational, logico-deductive paradigm. Evidence-based medicine follows this tradition by promoting a strong biostatistical, clinical, epidemiological bias upon the production of new knowledge. And whilst it acknowledges the importance of clinical experience and patient preferences in arriving at the best treatments, it does not explain how these different world views are integrated. The tacit or implicit modes of deriving evidence through experience and reflection are considered too subjective to be reliable in a predictive sense. And patient experiences, although interesting, do little (it could be argued) to counteract the predictable course of a pathological process.

Just as individual subjective experiences are subordinate to the traditional, deductively derived approach to knowledge generation, so too are the wider contextual issues such as culture, organization systems, and social, political, and power relations. Evidence is also perceived to be static in that it is a fixed entity. Yet we know that knowledge is of a provisional, fluid, and fast-developing nature, and its effect has therefore to be interactive rather than impersonal. The push of a seemingly rigid system of evidence production is interesting given the significant shift in acknowledging the need for knowledge to be derived from various sources using a variety of mechanisms. It may be that, as a method, the classic evidence-based-medicine model is a useful starting point upon which several further layers of evidence need to be stratified (Estabrooks, 1998; Sandelowski, Docherty, & Emden, 1997).

It is important, at this point, for us to consider how users' needs and problems are communicated to those responsible for generating the

Figure 1 *The Multidimensional Nature of Context as It Relates to Research Utilization*

Evidence (x)

- scientific
- experience
- patient preferences

Means of communicating evidence to individual (z)

e.g.
- characteristics of message
- change agent
- opinion leader
- specific educational activities
- guidelines
- individual incentives/sanctions

Context (a–f)

f = outer context — economics, social/political environment

e = inner context — resources, capabilities, structures, culture, politics

a = leadership styles — personal relationships, roles/accountability, multidisciplinary functioning

b = social networks — amount of contact outside organization across boundaries

c = systems in place for problem-solving, evaluation, monitoring, obtaining feedback on performance

d = culture — values, philosophy, atmosphere, rewards, sanctions, decision-making patterns

y = individual

y^{1-n} = personal role, status, education, power base

research agenda. It is equally important for us to be involved in debates around ensuring multiple perspectives on the nature of evidence and enabling more appropriate theoretical frameworks and methodologies to be derived that will help explicate the fluid and contextualized nature of evidence.

The Diffusion/Utilization Process

The mechanism whereby the innovation or new piece of research is accepted by individuals in a social system is described by Rogers (1995). This work has had a significant influence on the way our understanding has been structured. Known as the diffusion, dissemination, utilization, or implementation process, it covers five stages. At the knowledge stage, the individual is first exposed to the new idea. Individual characteristics such as educational background, position, and social networks influence the level of interest at this stage. Similarly, attributes of the new idea itself will influence how easily it will be adopted and how much persuasion will be needed to introduce it. The decision to accept a new idea is the next stage. This is interesting because it naturally assumes that individuals can make independent decisions influencing their practice. This assumption may be related historically to the landmark studies of farming communities, which found that individual farmers could make independent decisions (Ryan & Gross, 1943). Studies of physician behaviour (Lomas, 1994) reinforce this autonomy bias. The fact that studies of innovations in nursing found less ability to introduce innovations may illustrate the important relationship between autonomy and choice (Hodnett et al., 1996). Given the limited available evidence and the bias inherent in earlier studies, we may be no further ahead in understanding these complex issues.

The implementation and confirmation stages complete the diffusion process. Again, consistent with the theoretical position taken by Rogers (1995) and other communications experts, the emphasis is on how the message (the innovation) was successfully transmitted to the recipient. What the recipient does to turn the information into a set of observable actions is not central to communications theory. Perhaps this is why relatively little data appear on this part of the process.

The implementation stage is much more pertinent to social psychologists, action scientists, and organizational theorists than to the communications theorists who influenced early conceptualizations (for example, Bandura's [1986] work on social learning theory, Argyris & Schön's [1974] work on action science, and Pettigrew's [1985] perspectives on the link between change and contextual issues). Little connec-

tion has been made between the role of the change agent (in Rogers's [1985] scheme), the opinion leader or research champion, and the implementation process.

Health-care research (Getting evidence into practice, 1999) in this area continues to conceptualize the implementation stage as a point when discreet interventions such as continuous medical education (CME), clinical guidelines, and opinion leaders can be used to enhance the uptake of the innovation. There is scant acknowledgement of the complex interactions, interdependencies, power struggles, and general confusion that characterize most clinical settings.

The Nature of the Context

Arguments are mounting for the need to acknowledge the increasingly large part that context plays in effective research utilization (Ferlie, Barton, & Highton, 1998; Kitson, Ahmed, Harvey, Seers, & Thompson, 1996; Kitson, Harvey, & McCormack, 1998). Research interest is moving away from communications patterns and individual characteristics to a deeper understanding of the wider environmental and organizational characteristics. Change should be considered in terms of not only processes, but also the historical, cultural, and political features of the organization (Pettigrew, 1985; Pettigrew, Ferlie, & McKee, 1992). Pettigrew and Whipp (1991) describe the continuous interplay between core elements of content, context, and process. Similarly, Kitson et al. (1998) argue that successful implementation of research findings is a function of the nature of the evidence, the appropriateness of the context, and the characteristics of the facilitation mechanism used to introduce the change.

The systematic study of the impact of the context on the uptake of evidence (in its broadest meaning) must be recognized as a central area of investigation over the next 5 years. As illustrated in Figure 1, context is multidimensional. If we begin to see the individual recipient of the information as surrounded by this multilayered set of conditions (a–f), we begin to understand why it is that some individuals seem to be more effective in utilizing research than others. Add to this the personal characteristics (y^{1-n}), the characteristics of the message (x), and the way it was communicated (z), and we have yet another set of variables to consider. The ability to map out these elements in some sort of systematic way must be a precondition for being able to study interrelationships and cause-and-effect patterns.

Focus on context also raises questions about the centralist or top-down nature of the classical diffusion model. Rogers (1995) acknowledges that the majority of diffusion studies have been built upon the assumption that rigorous scientific knowledge is developed by experts and disseminated in a top-down way to individual recipients in a system. Schön (1967) notes that classical models fail to capture the complexity of relatively bottom-up or decentralized diffusion systems in which innovations originate from numerous sources and then evolve as they diffuse via horizontal networks. The fundamental assumption of decentralized diffusion systems is that members of the user system have the ability to make sound decisions on what should be diffused and how the diffusion process should be managed. Assumptions have also been made that diffusion research has identified all the key elements that help practitioners utilize research.

How a growing awareness of local ownership and control of diffusion networks balances with the perceived rigidity around evidence-based practice is an interesting point for reflection. It may be that safeguards around the rigour of the evidence are provided by experts but the diffusion process is then supported or facilitated to allow local ownership and control. As Rogers (1995) acknowledges, he has possibly "severely underestimated the degree to which a user system is capable of managing its own diffusion processes."

The Nature of the Change Agent

The growing acknowledgement of wider contextual issues, in turn, changes the emphasis on the nature and role of the change agent within diffusion research or research utilization. Classically, the change agent has been described as an individual who influences clients' innovation decisions in a direction deemed desirable by the change agent. The role has been instrumental insofar as it has worked with individuals to identify a need, provide information, diagnose the problems, and work with the client on achieving the change. There is no explicit reference to the change agent developing improved self-management, self-awareness, decision-making, problem-solving, or reflective skills in the client, thus leading one to deduce that instrumentally the relationship is about completing a task and then retreating.

Within the wider context such a change-agent role is less viable. Given the levels and layers of meaning to be negotiated, the role of change agent is more likely to become one of enabler, guide, support, advocate, interpreter, and facilitator. The roles of external change agent and internal opinion leader are often confused (Getting evidence into

practice, 1999; Kitson et al., 1998), which indicates the need for more careful theorizing and observation in the light of greater understanding of the influence of context.

Also important is an understanding of the mechanism used by change agents to transfer ownership of the innovation from themselves to the internal opinion leader or group. Incentives (e.g., remuneration, gifts, greater status) have been used with some groups, but if we are considering widespread organizational uptake perhaps incentives around equality, autonomy, mutual respect, valuing individual contribution, and so on must be considered.

Concluding Remarks

It would seem that health care (including nursing) is entering a period of intense activity around research utilization methods and practices. We need to take account of existing research findings but acknowledge the theoretical and methodological blind spots. Our new endeavours must offer us the ability to integrate scientifically derived knowledge with personal experience and patient preferences in ways that are rigorous, holistic, and theoretically coherent. We need to recognize the limitations of the many diffusion studies that necessarily focused on communication patterns and individual characteristics. Having mapped out these areas, we must now move on to embrace the complexities of the wider context and how our relationships within that context influence our ability to respond to innovations. Finally, we must face more fundamental questions, concerning whether we can or should entertain the possibility of workers and clients themselves developing that capacity to decide what innovations should be introduced, how, and for what purpose!

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Transferring Public-Health Nursing Research to Health-System Planning: Assessing the Relevance and Accessibility of Systematic Reviews

Donna Ciliska, Sarah Hayward, Maureen Dobbins, Ginny Brunton, and Jane Underwood

Une étude descriptive a été conçue dans le but d'acquérir une compréhension des besoins en matière de recherche, de la perception des obstacles empêchant la mise en pratique de la recherche et des attitudes à l'égard des révisions systématiques effectuées par les décideurs en santé publique en ce qui a trait à la planification des systèmes. Les experts-conseils et les gestionnaires dans le domaine de la santé publique en Ontario ont été interviewés au sujet des obstacles empêchant l'utilisation de la recherche et des attitudes face aux révisions systématiques en tant que méthode/véhicule favorisant l'utilisation de la recherche. Cinq cas de révisions menées à terme ont été fournis sous forme de sommaire, de résumé et de version complète, sur disquette, en document imprimé et sur Internet. Des suivis sous forme d'entrevues ont été effectués après trois mois, évaluant l'utilisation, la pertinence, l'application et la diffusion supplémentaire des révisions. Ont participé un total de 242 personnes occupant des postes liés aux politiques en santé publique et au processus décisionnel. Les répondants ont signalé qu'il y avait un grand besoin de preuves générées par la recherche, et que celui-ci était loin d'être comblé. Selon eux, des révisions systématiques aideraient à surmonter les éléments faisant obstacles à l'utilisation de la recherche liés à la critique, au temps, à la pertinence du moment, à la disponibilité, au coût et à la crédibilité, mais non les éléments liés au climat créé par les politiques existantes, l'autorité ou la mise en œuvre de ressources. Trois mois après avoir demandé une révision, 93 % disaient faire un suivi; 91 % se souvenaient d'avoir reçu le rapport et 71 % l'avaient lu alors que 23 % déclaraient que la révision influait sur la planification des programmes ou la prise de décision.

A descriptive study was designed to gain an understanding of the research needs, perceptions of barriers to research utilization, and attitudes towards systematic reviews of decision-makers in public health at the level of systems planning. Public-health consul-

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tants and managers in Ontario were surveyed about barriers to research utilization and awareness of and attitudes towards systematic reviews as a method of/vehicle for research transfer. Access to 5 completed reviews was provided in summary, abstract, and full form, and on diskette, hard copy, and internet. A follow-up survey at 3 months assessed use, relevance, application, and further dissemination of the reviews. A total of 242 people in positions of public-health policy and decision-making participated. Respondents reported a great, largely unmet, need for research evidence. They viewed systematic reviews as likely to overcome the barriers to research use related to critical appraisal, time, timeliness, availability, cost, and credibility, but not the barriers related to policy climate, authority, or implementation resources. Three months after requesting a review, 93% said they would follow it up; 91% remembered receiving it, and 71% of these had read it while 23% stated it played a part in program planning or decision-making.

The current proliferation of health-related journals makes it impossible to keep up with the relevant literature in one's area of practice. Increasingly, systematic reviews are seen as necessary in coping with the increasing volume of research and in avoiding the dissemination of conflicting results (Gray, 1997; Sibbald & Roland, 1997).

In 1992 the Hamilton-Wentworth Regional Public Health Department (Ontario) began an initiative to gather, appraise, and synthesize evidence related to the effectiveness of interventions in public-health nursing. Its purpose was to provide relevant and accessible research results to support evidence-based decision-making at the levels of practice, program planning, and policy direction. Provincial organizations of public-health nurses played an advisory role in the project, and the production of reviews was a collaborative undertaking with strong communications links between researchers and clinicians. Systematic review methods attempt to overcome some of the bias inherent in a literature review. The process defines a specific question; sets out explicit search strategies; retrieves the information; applies predefined relevance and validity (quality) criteria; extracts specific data; and combines, analyzes, and synthesizes the results. Emphasis is placed on methods that increase the replicability of the findings and reduce bias arising from reviewers' opinions, incomplete sampling, or methodologically flawed primary studies (Bero & Rennie, 1995; Cochrane Collaboration, 1993).

However, the existence of systematic reviews does not ensure their dissemination and application to practice or policy development. The many barriers to research dissemination and utilization include the characteristics of the individual, the organization, the environment, and the innovation (Dobbins, Ciliska, & DiCenso, 1998; Funk, Tornquist, & Champagne, 1995; Haines & Donald, 1998). Systematic reviews have the potential to overcome barriers associated with lack of access to jour-

nals, lack of time to read and appraise the articles, and lack of critical appraisal skills. In systematic reviews, a team has done the work of finding the relevant articles, assessing their quality, and synthesizing the results into recommendations for practice and research.

The purpose of the project was to survey decision-makers in public health in order to gain an understanding of their research needs, their perceptions of barriers to research utilization, and their attitudes towards systematic reviews. While the research utilization of front-line practitioners is an interesting area for investigation, this study focused on decision-makers because they make the first-level decisions concerning programs and provide direction in resource utilization. In Ontario, the Public Health Branch of the Ministry of Health has published *Mandatory Health Programs and Services Guidelines* (Ontario Ministry of Health, 1997), which determines the minimum require- ments of each Public Health Department in the province. Based on these guidelines, the local Medical Officers of Health, epidemiologists, and managers must make decisions about resource allocation. Available, relevant, up-do-date systematic reviews could be helpful to both the public-health consultants in the Ministry of Health and local managers in deciding how best to utilize scarce resources. In addition, one of the goals of the funder of this project, the Ontario Health Care Evaluation Network, was to bring together researchers and policy- makers so that they would be made aware of each other's needs.

The specific objectives of this proposal were to:

1. Identify key targets for dissemination of research overviews in public-health policy environments.

2. Assess decision-makers' awareness of and attitudes towards sys- tematic overviews as a method of research transfer.

3. Assess the current relevance and accessibility of available overviews to decision-makers.

4. Provide access to research overviews in four forms and describe user preferences.

5. Identify factors influencing the interpretation and application of overview results in public-health policy.

Methods

This descriptive study with public-health policy-makers in Ontario was carried out in five stages.

Stage 1: Development of Telephone Survey Tool

Two focus groups of 8–10 people each were held with public-health managers and administrators from Alberta to explore issues surrounding access to research and utilization of systematic reviews. The focus groups were conducted by one of the authors (SH), who was trained in conducting focus groups by a nurse prepared at the doctoral level in qualitative research. Participants in the focus groups represented the full range of disciplines of interest to the study. Each focus group included at least one Medical Officer of Health (one was an advisor to the Alberta Health Authority); four or five managers, mostly nurses practising in both urban and rural Alberta; and one or two research consultants or epidemiologist-consultants. The focus groups lasted 90 minutes and covered questions related to the use of research in public-health decision-making, barriers to research utilization, and attitudes towards systematic reviews. Participants were invited to give their input on what would be pertinent questions regarding the applicability and usefulness of systematic reviews.

The focus groups were audiotaped and transcribed verbatim. Thematic analysis was carried out jointly by the person who conducted the focus groups and the person who trained her. The themes were then combined with issues related to barriers to research utilization from the literature (Funk et al., 1995), to develop a structured questionnaire designed to elicit information about attitudes towards evidence-based practice, usual use of and access to research, perceived barriers to research utilization, and awareness of and attitudes towards systematic reviews. The questionnaire was pre-tested for content validity and verbal comprehension, then revised and tested for test-retest reliability. For the reliability testing, 18 decision-makers at the Hamilton-Wentworth Regional Public Health Department (Ontario), who were subsequently excluded from the full survey, were administered two identical telephone questionnaires 2 weeks apart. A few questions had dichotomous answers but most were answered on a five-point scale. On test-retest, any of those questions that resulted in a correlation coefficient below 0.5 were either reworded or removed from the questionnaire.

The proposal achieved ethics approval from the Research Advisory Group of Chedoke-McMaster Hospital in Hamilton, Ontario. The investigators determined that the potential group of participants was too small and too diverse in terms of disciplines and urban/rural differences for a sampling to be done. The decision was made to contact all the people who met the inclusion criteria. Thus a list of 277 decision-makers in public health in Ontario was developed by telephoning the

Public Health Branch and every public-health department in the province. The phone call was made to the administrative assistant for either the Medical Officer of Health or the Director of Nursing (or equivalent). They were asked to identify every manager to whom nurses reported in their line structure. The resulting list included all identified Program Managers and Directors responsible for making decisions concerning nursing practice, Medical and Associate Medical Officers of Health, and Public Health Officials within the Public Health Branch of the Ministry of Health. The 270 people identified were sent a letter asking them to participate in the study and letting them know that they would be receiving a phone call to set a time for an appointment.

Stage 2: Preparation of Overview

Using rigorous systematic review methods, five overviews of studies on the effects of various public-health interventions were completed by 1996. These were: the effectiveness of home visiting (Ciliska et al., 1994), community-development projects (Ploeg, Dobbins, et al., 1995), maternal-child interventions (Hayward et al., 1996), school-based adolescent suicide-prevention curricula (Ploeg, Ciliska, et al., 1995), and community-based heart-health projects (Dobbins, Thomas, Ciliska, Hayward, & Underwood, 1996). The decision was made to use systematic reviews produced by this group. As decision-makers and clinicians in Ontario had had input into the topics chosen for the review, these were seen as relevant and timely in the climate of the day.

Each overview was prepared as a full paper (about 30 pages), a summary of results and recommendations (2 pages), and a structured abstract (1 page). Each was made available on hard copy, on diskette, and on a website. The full paper and abstracts were written in academic style; the summaries of results and recommendations were written in more accessible language. However, no testing was done of the various presentations.

Stage 3: Telephone Survey

The structured 20-minute questionnaire was administered by telephone. Personal information included age, discipline, date of graduation, and years of experience in public health. At the end of the interview participants were informed of the five overviews available through this project and were asked if they were interested in receiving any of these, and in what form. Individualized packages were sent as requested. During this study period, the follow-up telephone survey was developed and pretested as in stage 1.

Stage 4: Follow-up Survey

The follow-up telephone questionnaire was administered 2 to 3 months after the first interview. It focused on receipt of whatever overviews had been requested, whether any of the requested material had been read, perceived usability, relevance, application, and further dissemination of the reviews. The questions about attitudes and barriers were identical for each telephone survey but the stem of these questions was changed to reflect the possibility of greater familiarity with systematic overviews. Personal information was not gathered a second time. All phone calls, for both surveys, were made by one of the investigators (MD).

Stage 5: Data Analysis

The data were analyzed using SPSS to provide descriptive statistics on attitudes, awareness, preferences for information, uptake of reviews, and subsequent utilization. Difference in actual use of the material by age, discipline, years elapsed since graduation, and educational background was tested using chi-square analysis. Chi-square analysis was also used to test for differences in attitudes towards systematic review from time 1 to time 2. Only participants for whom the survey data were available both times were included in the chi-square analysis.

Results

Participants

A total of 277 people were eligible to participate in the survey; 242 (87%) agreed to participate in the first survey and 225 (93% follow-up) participated at the second phone call. The people who did not participate in the first survey were from the range of disciplines and positions in the health departments and the Public Health Branch. As reasons for declining they cited lack of time and the need for only one response per health department. At the second phone call, the most common reason for non-participation was that the person was no longer employed in the department.

Age distribution is shown in Figure 1; the largest group were those in the 41–50 range. As for discipline, 67% identified themselves with nursing, 21% medicine, 4% inspection, 3% nutrition, 1% dentistry, and 4% other (e.g., health promotion, epidemiology). Education levels are shown in Figure 2; baccalaureate preparation was the minimal level achieved, with almost half the participants at the master's level. With respect to time elapsed since most recent graduation, the range was 0–42 years, with 39% under 10 years, 38% 10–19 years, 21% 20–29 years,

and 2% over 30 years. Table 1 shows the distribution of years in current position and years of experience in public health. Figure 3 shows the position, with the largest proportion employed as nursing managers.

Figure 1 *Age Ranges of Participants*

- 21–30
- 31–40
- 41–50
- 51–60
- >60

Figure 2 *Educational Preparation*

- Bachelor's
- Master's
- Doctorate
- Fellowship
- Other
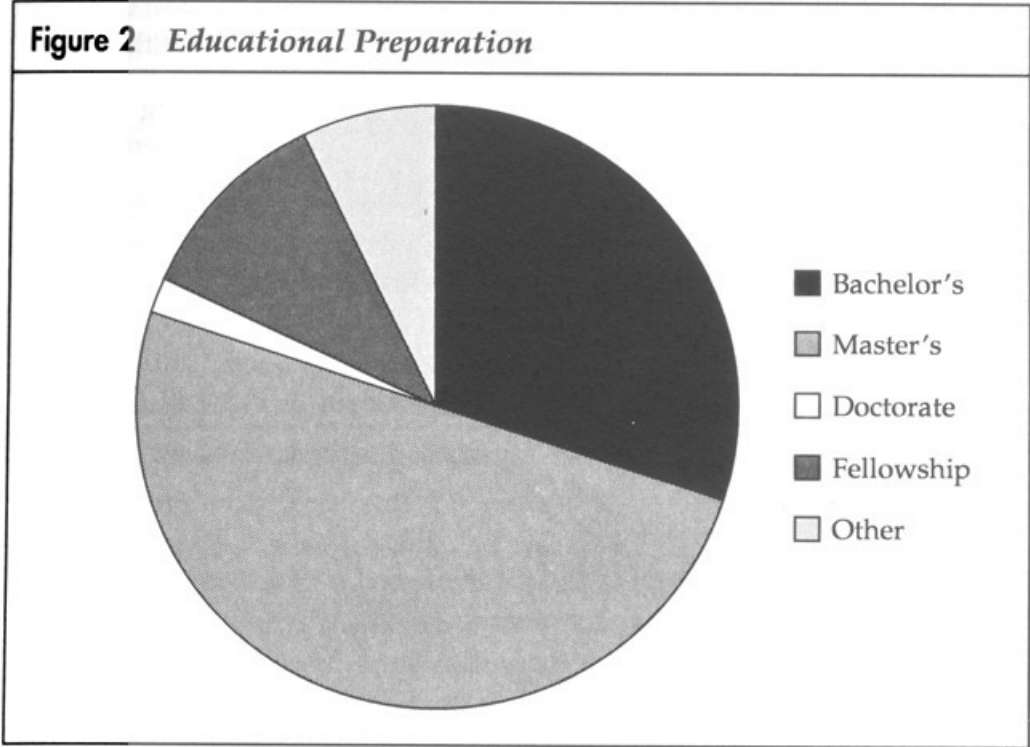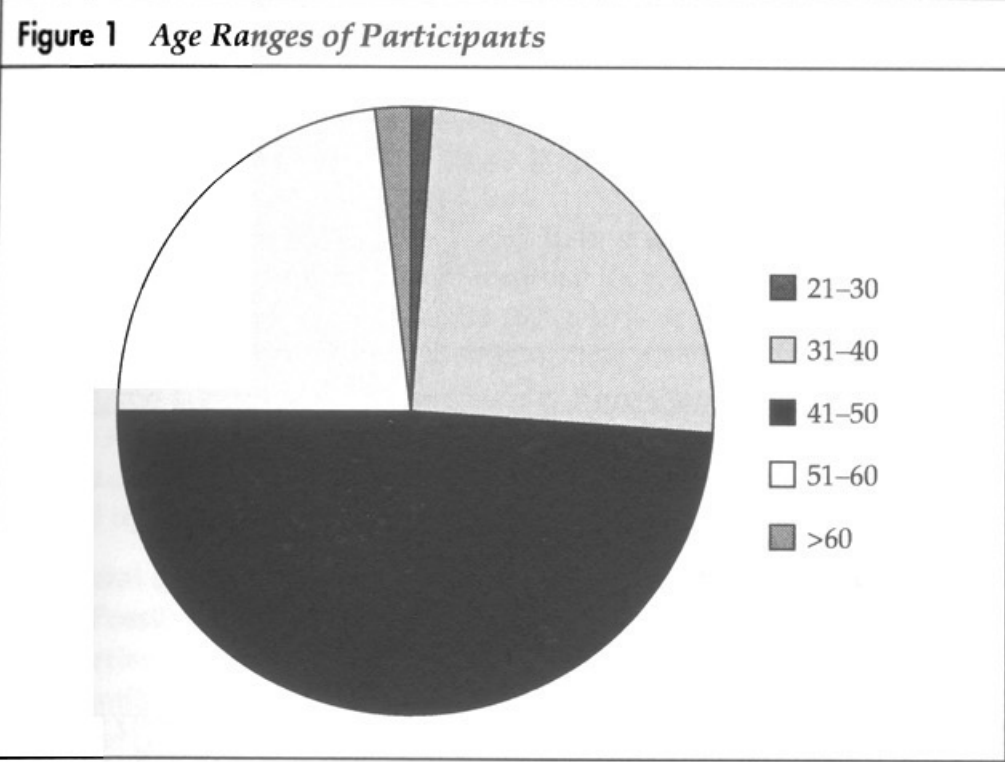
Table 1 *Distribution of Years in Public Health and Current Position*

	Years in	
	Public Health *n* (%)	**Current Position** *n* (%)
<5 years	6	39
5–9	17	44
10–14	22	10
15–19	21	6
>19	34	1

Figure 3 *Positions*

Ministry of Health

Medical Officers of Health

Nursing Managers

Other Managers
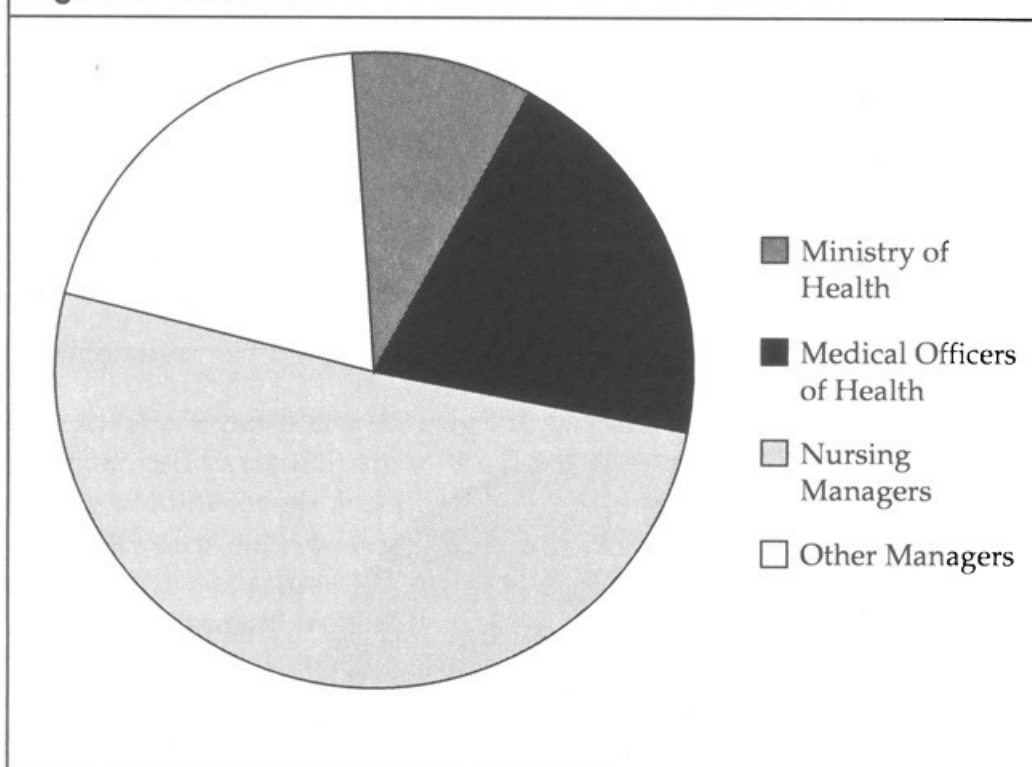
Results by Objective

1. Identification of key targets for dissemination of research overviews.
At the second phone call, participants were asked whether they remembered receiving the requested information and, if so, whether they used the information in program planning or decision-making. Chi-square analysis revealed no significant differences in reported use by age,

program responsibility, discipline, number of years since most recent graduation, current position, or highest level of education.

2. Assessment of decision-makers' awareness of and attitudes towards systematic overviews as a method of research transfer. Participants were asked about their current level of need for research information; 19% rated it as "very high," 54% "high," 24% "moderate," 3% "low," and none "very low." When asked if their need was being met, 56% responded negatively. Important sources of information about program effectiveness were explored (respondents were allowed to name up to three sources), with 98.8% listing journals as an important source, followed by unpublished literature (68%), expert opinion (30%), the popular press (21%), and books (8%); 45% of participants reported they had retrieved 1–9 journal articles in the previous month, with 7% retrieving no articles and 48% retrieving more than 10 articles; 43% had done or requested a literature search in the previous 3 months, 65% reported direct or indirect access to on-line search capabilities, and 46% reported internet access.

Several questions concerned perceived barriers to using research results. Possible answers were "not a problem," "minor barrier," "moderate barrier," "serious barrier," and "very serious barrier." Those barriers identified as "moderate," "serious," or "very serious" by at least 50% of the participants are listed in Table 2. Barriers more often rated as "not a problem" or "minor barrier" included cost of retrieving information (72%), critical appraisal skills (55%), credibility of the authors of the research (69%), workplace not supportive of the use of research

Table 2 *Barriers to Research Utilization*

Percentages of respondents who rated barriers as a "moderate," "serious," or "very serious" problem	
Time	92%
Availability of research results	83%
Resources to implement research	80%
Relevance	76%
Policy climate — provincial	76%
Policy climate — regional	71%
Timeliness	70%
Current practice patterns	66%

(72%), insufficient authority to implement research results (70%), ethical disagreement (85%), and research information not valued at the community level (57%). At the second phone call, those who had received overviews were asked the same questions about the ability of overviews to overcome the barriers to research utilization. Chi-square analysis revealed no significant changes in their attitudes from time 1.

3. Assessment of the current relevance and accessibility of available overviews to decision-makers. Participants were asked if they had ever heard of systematic overviews; 57% responded affirmatively. For those who had not heard of them, or were not sure if they had, an explanation was provided; 86% then stated that the explanation sounded familiar, and 62% of these were able to give examples of overviews they knew about. In a manner similar to that used for the barriers questions, attitudes were assessed regarding the ability of systematic reviews to overcome barriers to research utilization. Response choices were "don't know," "definitely won't," "probably won't," "may," "probably will," and "definitely will." As shown in Table 3, respondents were positive in their attitudes towards systematic overviews and about their ability to overcome the barriers related to time, timeliness, and cost, but not about their ability to overcome the barriers related to policy climate or resources. When asked the priority in the research agenda that such syntheses should be given, 0 responded "bottom," 3% "low," 26% "middle," 62% "high," and 9% "top."

Table 3 *Ability of Overviews to Overcome Barriers to Research Utilization*

Percentages of respondents who answered "probably will" or "definitely will" overcome barriers

Time	82%
Cost	67%
Timeliness	62%
Relevance	46%
Current practice patterns	37%
Working culture	35%
Availability of research results	30%
Policy climate — provincial	30%
Policy climate — federal	29%
Resources to implement research	22%
Policy climate — regional	21%

4. Preferred form of systematic overviews. At the first phone call, 68% of participants were already aware of overviews from the Public Health Effectiveness Project. Ninety-one percent requested another overview (14% requested one more overview and 77% requested more than one more, for a total of 783 requests). The requested format was most often full paper (33%), followed by diskette (27%), abstract (16%), summary (14%), and internet (10%).

5. Factors influencing the interpretation and application of overview results in public-health policy. On the follow-up phone call, 91% of those who had requested an overview in any format remembered receiving the information. Of those who remembered receiving an overview, 71% had read it, either in whole or in part; 23% stated it played a part in program planning or decision-making, and 57% of these (approximately 14% overall) reported it influenced actual recommendations made to others; 64% of those recommendations were accepted.

Figure 4 shows responses to the question *To which part of the systematic review did you pay most attention?* Most participants focused on the conclusions, discussion, and results, while very few looked at the tables, often a source of important information. The same distribution was found for those who actually used the overview in program planning, in relation to the parts that were most useful in decision-making.

Figure 4 *Parts of Systematic Review Receiving Most Attention*
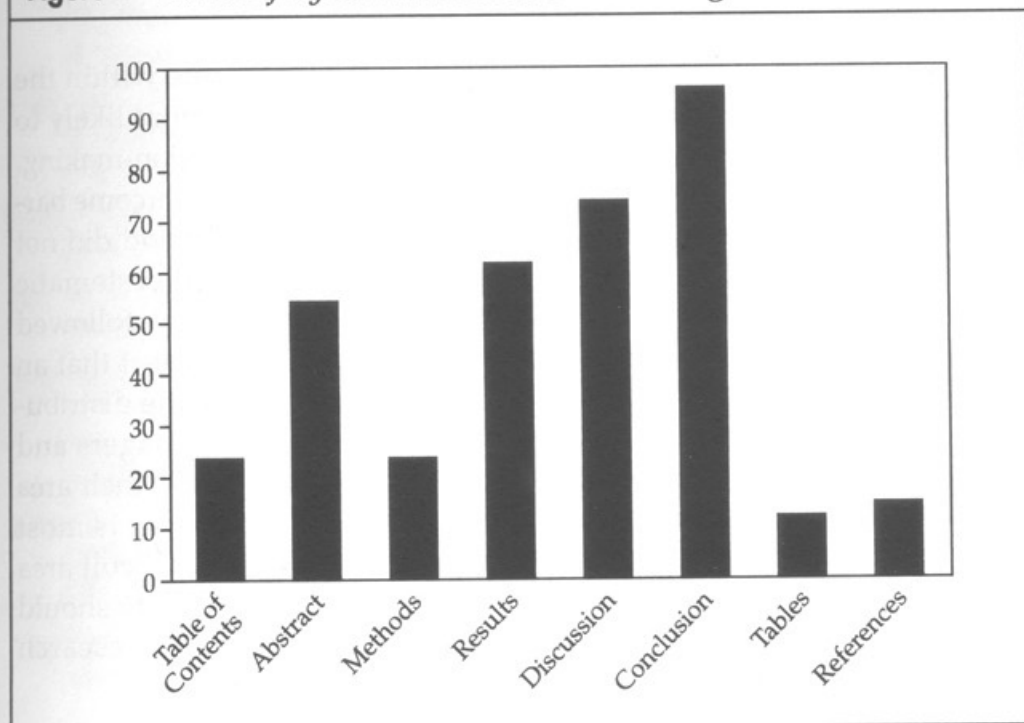
Discussion

Decision-makers in public health have a great perceived need for research information, which they judge is not being met. They actively request journal articles, literature searches, and retrieval of journal articles. This suggests that they are oriented to reading research. However, we cannot discern from this survey whether they actively use research. Reported barriers to research utilization are time, availability, timeliness, and resources to implement change. The majority of respondents in this study did not feel that critical appraisal skills were a barrier to their use of research literature, yet other studies report this as a major barrier (Lomas, Sisk, & Stocking, 1993; Pettengill, Gillies, & Clark, 1994). This may reflect the comparatively high level of education of the participants in this study. Most of those surveyed were familiar with systematic reviews and felt that overviews have the potential to overcome many barriers to research utilization. While the goal of this study was not dissemination of the chosen set of systematic reviews to policy-makers and decision-makers, the survey became a dissemination strategy for the prepared reviews. No a priori attempt was made to evaluate the effects of the survey as an intervention, although the study did gain information about requests and use of the systematic reviews: 91% of participants ordered at least one systematic review; most were aware of receiving it and had read some part of it, while a smaller number had utilized or planned to utilize the information from the review in decision-making.

In conclusion, this study was unable to target people within the group of public-health decision-makers who would be more likely to utilize systematic reviews for program planning and decision-making. Attitudes towards systematic reviews and their ability to overcome barriers to research utilization were positive at the beginning and did not significantly change as a result of exposure to additional systematic reviews. Preferred access to reviews was in full paper format, followed by disk, abstract, summary, and internet. The results suggest that an intervention for increasing research utilization might include distribution of systematic reviews in paper format that go to managers and decision-makers for whom the topic is timely and relevant to their area of influence. Application of overviews to decision-making is most limited by time and resources to implement change — a difficult area for any intervention to influence. Respondents felt that priority should be given to the synthesis of research literature within the research agenda.

During the second telephone interview many participants stated that they planned to use the information in the review in the near future. A third telephone interview is being planned to assess further utilization, and possibly the organizational characteristics that may be related to research uptake.

The area of research into dissemination and utilization of research is in its infancy. There is a need to continue case studies and qualitative exploration of factors that influence dissemination and utilization.

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Evidence-Based
Pressure-Ulcer Practice:
The Ottawa Model of Research Use

Jo Logan, Margaret B. Harrison, Ian D. Graham,
Kathy Dunn, and Janice Bissonnette

L'élaboration, dans divers cadres de soins de santé, d'une pratique infirmière fondée sur les résultats de recherche constitue un certain défi dans le contexte de la restructuration actuelle dans le domaine de la santé. Le présent article porte sur l'application du modèle d'application de la recherche d'Ottawa visant à accroître la pratique fondée sur les résultats de recherche dans trois contextes de soins de santé, dans une période marquée par de multiples changements structurels. Cette initiative s'inscrivait dans le cadre d'un projet-pilote provincial visant l'établissement de centres d'excellence en soins infirmiers voués à l'amélioration du suivi des soins dans le milieu de la santé. Trois organismes d'Ottawa œuvrant dans le domaine de la santé formaient l'une des quatre entités participant au projet panprovincial de pratique infirmière, une initiative d'une durée de trois ans financée par le ministère de la Santé de l'Ontario. L'objectif du site Ottawa-Carleton consistait à augmenter la fréquence des prises de décision fondées sur les résultats de recherche, particulièrement en ce qui a trait aux plaies de pression. L'article décrit les obstacles rencontrés, le soutien obtenu et les stratégies employées dans la poursuite de cet objectif, dans le contexte des soins communautaires, tertiaires et de longue durée. De multiples approches en matière d'intégration de la recherche ont été employées, avec un accent sur l'éducation. Le consensus parmi les personnes chargées de la mise en œuvre du projet et les réussites obtenues dans le cadre de celui-ci viennent confirmer l'utilité du modèle d'application de la recherche d'Ottawa à titre de guide d'application des résultats de la recherche dans les cadres de soins de santé susmentionnés.

Developing evidence-based nursing practice among diverse health-care settings is a particular challenge in the face of current health-care restructuring. This paper describes application of the Ottawa Model of Research Use (OMRU) to increase evidence-based practice across 3 health-care settings during a time of multiple restructuring changes. The

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initiative was part of a provincial demonstration project to develop centres of nursing excellence with a view to improving continuity of care across the health continuum. Three Ottawa health-care agencies formed one of 4 participating sites in the Province-Wide Nursing Project (PWNP), a 3-year initiative funded by the Ontario Ministry of Health. The goal of the Ottawa-Carleton site was to increase evidence-based decision-making with a focus on pressure ulcers. The barriers and supports encountered, and the strategies used, in striving to meet this goal in a community-care, tertiary-care, and long-term-care setting are described. Multiple research transfer approaches were used, with an emphasis on education. Implementor consensus and achievements of the project support the OMRU's utility as a guide to implementing research findings in these health-care settings.

Introduction

Estabrooks (1998) refers to the research utilization dilemma as a gap between what is known and what is done. Barriers to evidence- or research-based nursing practice as an issue were first described in the early work of Miller and Messenger (1978). At that time the most frequently identified obstacle was lack of access to research findings in a specific area of interest. Limited access to research, and issues related to the practice setting and the individuals who might use the findings, continue to be identified as obstacles (Funk, Tournquist, & Champagne, 1995; Kajermo, Nordstrom, Krusebrant, & Bjorvell, 1998; Logan & Davies, 1995; Walczak, McGuire, Haisfield, & Beezley, 1994).

To gain a better understanding of the barriers to research-based practice, investigators have looked at the attitudes of nurses and administrators as a predictor of research use (Bostrom & Suter, 1993; Bostrom, Malnight, MacDougall, & Hargis, 1989; Champion & Leach, 1989; Rizzuto, Bostrom, Suter, & Chenitz, 1994). One consistent finding is that the following factors correlate to nurses' limited use of research: lack of awareness of the innovation; negative attitudes towards the specific innovation, and towards evidence-based practice and change more generally; lack of skills to interpret the evidence or to carry out the new innovation; and lack of ongoing administrative resources. Cavanagh and Tross (1996) cite nurses' perceived lack of time as the greatest barrier to research utilization. Additional barriers include nurses' lack of participation in research activities, lack of familiarity with the research process, and limited experience and motivation. Funk et al. (1995) identified key barriers to nursing research use related to the work environment. The obstacles included lack of authority, limited time, and lack of support from administrators and colleagues. It appears all these obstacles play a role in the tendency of nurses to not use research evidence.

Given the longstanding existence of numerous barriers to research use, diverse models have been suggested to facilitate the process of implementing research (Logan & Graham, 1998; Stetler, 1994; Titler et al., 1994; White, Leske, & Pearcy, 1995). This paper describes how application of a research-use model guided implementation of a pressure-ulcer project in three health-care agencies.

The Ottawa Model of Research Use

The Ottawa Model of Research Use (OMRU) (Logan & Graham, 1998) consists of six key elements interconnected through the process of evaluation (Figure 1). These elements address the central components in the process of utilizing research: the practice environment, the potential research adopters (administrators and clinical staff), the evidence-based innovation (the research intended for use in practice), strategies for transferring the innovation into practice, adoption/use of the evidence, and health and other outcomes. The term "innovation" is used to mean something that is new to the potential adopter but not necessarily to others (Rogers, 1995).

Integral to the OMRU is the systematic assessment, monitoring, and evaluation (AME) of the state of each of the six elements prior to, during, and following any research transfer effort. These data can serve three functions: (1) to identify a profile of potential barriers to and supports for research use related to the practice environment, potential adopters, and the evidence-based innovation; (2) to provide direction for selecting and tailoring transfer strategies to overcome the identified barriers and enhance the supports; and (3) to evaluate the use of the evidence-based innovation and its impact on the outcomes of interest (Logan & Graham, 1998).

Profiles of the practice environment, the potential research adopters, and the evidence-based innovation may be made concurrently or in sequence according to some rationale based on the clinical topic selected, available resources, or the nature of the setting.

The "practice environment" directs attention to the assessment of such factors as: decision-making structure; beliefs and values within the organization; norms; practices and rules and policies; social cohesion; support and pressure; resources; economic and other incentives; and politics and personalities. These factors may constitute either barriers to or supports for adoption of research evidence.

Nurses are the "potential adopters" of the research-based innovation. The knowledge, attitudes, skills, current practices, and demo-

Figure 1 *The Ottawa Model of Research Use*
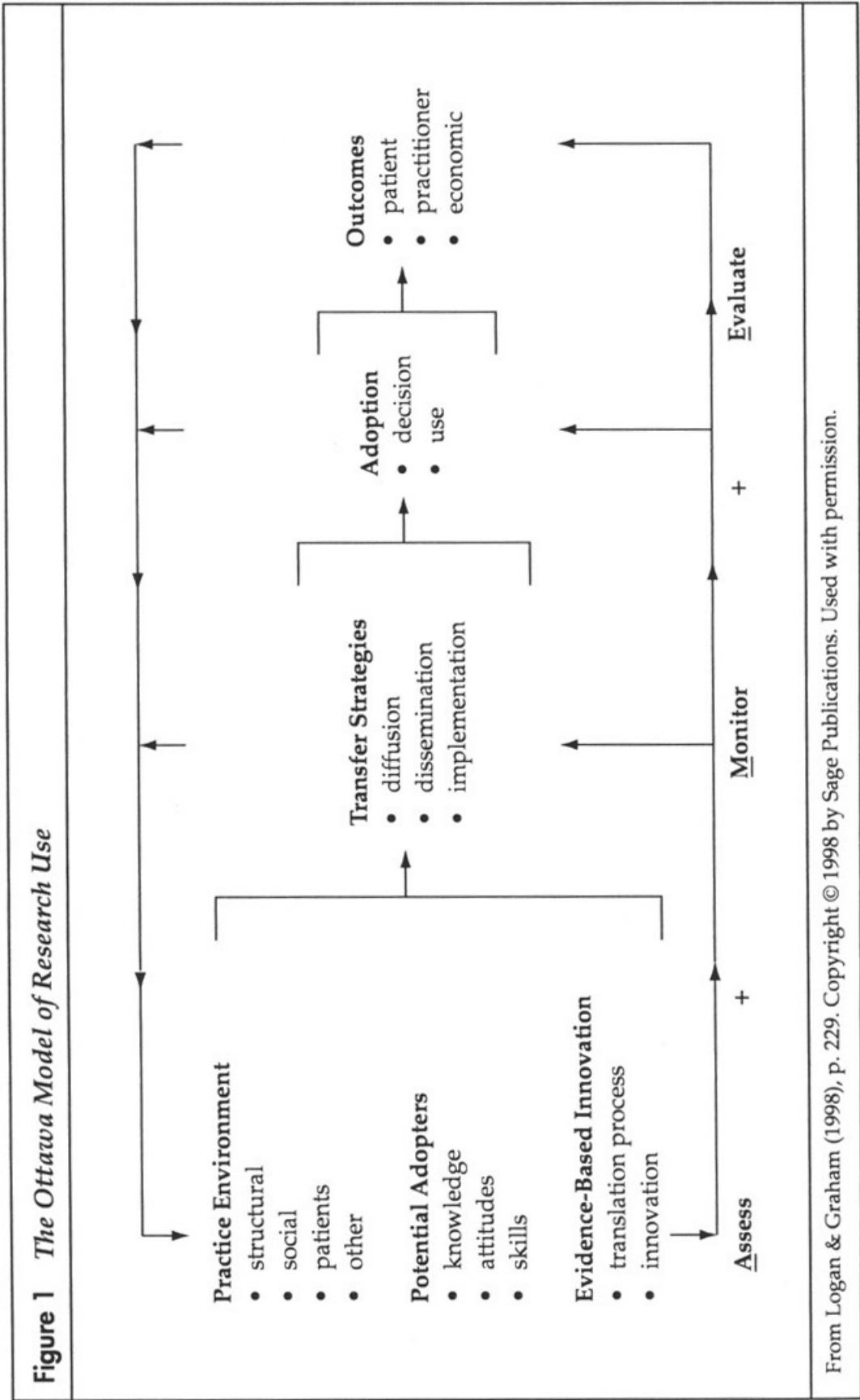
Practice Environment
- structural
- social
- patients
- other

Potential Adopters
- knowledge
- attitudes
- skills

Evidence-Based Innovation
- translation process
- innovation

Transfer Strategies
- diffusion
- dissemination
- implementation

Adoption
- decision
- use

Outcomes
- patient
- practitioner
- economic

<u>A</u>ssess

<u>M</u>onitor

<u>E</u>valuate

graphic characteristics of the nursing group may be described to create a profile of potential barriers to and supports for research use. For example, negative attitudes towards change are likely to act as a barrier, knowledge of research methods as a support.

Perceptions about attributes of the "evidence-based innovation" may constitute a barrier or a support. These can concern the process by which the research evidence was translated into some evidence-based innovation (e.g., the process by which a practice guideline was developed) or the innovation itself (e.g., the actual guideline). Negative perceptions of the innovation will serve to delay its diffusion throughout the system (Rogers, 1995).

"Research transfer strategies" are strategies for getting evidence-based innovations to potential adopters and promoting their adoption and use. Strategies for transferring the evidence and facilitating its use are selected and tailored based on the specific barriers and supports described in the profile assessment. Lomas (1993) divides research transfer into three conceptually distinct processes: diffusion, dissemination, and implementation. He describes "diffusion" as a passive, uncontrolled process — for example, publication of findings in a professional journal. "Dissemination" is a more active concept that involves targeting and tailoring, such as mailing an evidence-based innovation to the membership of a specific nursing organization. Finally, "implementation" is the process by which dissemination is coupled with systematic efforts, such as nursing-education workshops, to remove barriers to the adoption and use of the evidence-based innovation.

The last two elements of the OMRU are "research adoption and use" and "outcomes." The former represents the decision to use and the behavioural change of making full use of the innovation as the best course of action (Rogers, 1995). Evaluation of adoption and use will determine whether the innovation is being used as it was intended. This assessment is necessary, since the outcome of research use will depend to some extent on *how* it was used. "Outcomes" relates to patients and their families, practitioners, and economic dimensions (Titler et al., 1994).

Application of the OMRU

The OMRU guided the implementation of evidence-based pressure-ulcer practice as part of a larger project. The Ontario Ministry of Health established a Province-Wide Nursing Project (PWNP) in 1994 with the

goal of developing a process for improved continuity of care by establishing centres of nursing excellence. The PWNP focused on four pillars of nursing practice: clinical decision-making, evidence-based practice, continuous quality improvement, and primary nursing. Ottawa-Carleton, as one PWNP site, comprised a tertiary-care hospital, a long-term-care setting, and a community nursing agency that serves a unique blend of urban-rural communities in a bilingual, multicultural environment. This collaborative triad offers a range of services provided by both registered nurses and registered practical nurses. The OMRU was used to focus the activities of the Ottawa-Carleton PWNP site.

Profile Development: Research Evidence, Practice Environment, Potential Adopters

The profile assessment of the research evidence included regional pressure-ulcer study data and local pressure-ulcer prevalence and incidence data, along with published research reports (Fisher et al., 1996; Harrison, Wells, Fisher, & Prince, 1996). The profile data on the practice environment and potential adopters were collected through focus groups and interviews with key informants, as well as through feedback during and following workshops offered by the agencies. Focus-group volunteers were selected according to each agency's method of having staff attend in-service education sessions.

Assessing the research evidence. Skin care reflects the overall quality of care a client receives in tertiary, community, or long-term care (Harrison, Logan, Joseph, & Graham, 1998). Because each setting had previously engaged in individual projects to address skin care, we selected this issue as our PWNP clinical focus for research utilization and improved continuity of care.

Studies reported in the past decade provide estimates of pressure-ulcer prevalence ranging from 4.7% (Allman et al., 1986) to 9.2% (Meehan, 1990) to 29.5% (Oot-Giromini et al., 1989). While there is limited published information on prevalence in Canadian hospitals, the first comprehensive and relevant report documented an overall prevalence rate of 25.7% for 2,384 patients in eight Ontario and Quebec facilities (Foster, Frisch, Denis, Forler, & Jago, 1992). The second Canadian study, from two large tertiary-care sites ($n = 1,020$), found that the percentage of acute-care patients with a pressure ulcer increased with age, particularly in those patients over 80 years old (Fisher et al., 1996; Harrison et al., 1996). A single hospital study found a pressure-ulcer

prevalence rate of 29.7%, which reinforced the size and importance of pressure ulcers as a clinical problem (Harrison et al., 1996). The studies to date have mostly focused on the institutional sector. No Canadian community prevalence or incidence studies were found in the literature. In studies from the United States, pressure-ulcer prevalence was found to be 19% in one small sample ($n = 40$) (Langemo et al., 1990) and 29% in a study using a convenience sample ($n = 103$) of a county health department in New York (Oot-Giromini, 1993). The previously documented size of the clinical problem acted as a support for the project.

We found two sets of clinical-practice guidelines on pressure ulcers to be useful and very credible sources of evidence-based recommendations (Agency for Health Care Policy and Research, 1992, 1994). These guidelines established a current standard for evidence-based practice (Brunt, 1993). Two of the participating settings had already adopted the Agency for Health Care Policy and Research (AHCPR) guidelines. This acceptance was a significant support for the implementation of evidence-based practice.

The assessment profile of the available evidence on the clinical topic and its applicability across the three settings was primarily positive. From this sound evidence base, we decided to use pressure-ulcer prevalence studies in several ways to further the project. Consistent with OMRU practices, prevalence study data were used to assess the size of the problem prior to any change in practice. Involving the clinical staff in data collection, and later in using the data findings to plan changes in care, served to increase knowledge and ownership of the process of using evidence. The surveys provided further useful evidence to help nursing staff understand sources of evidence and interpret them for use in practice.

The prevalence-survey methodology developed in the tertiary-care hospital was adapted for use in the long-term-care setting. Local investigators, clinicians, and a methodologist developed a feasible and scientifically sound method for conducting the prevalence survey in the community, in part by defining the prevalence point as 1 week rather than the 1 day used in the other agencies. Using similar methods for data collection and analysis in the future will provide ease of documenting ongoing problems and planning integrated interventions across the health-care continuum.

Assessing the practice environment. Because the university-affiliated tertiary-care hospital had more resource expertise, it was selected as the lead institution for the local PWNP. During the previous

5 years, the hospital had undertaken a large research utilization effort focused on pressure ulcers. The credibility and strength of the skin-care program made it a perfect point from which to form collaborative links with other health-care agencies. In order to concentrate resources, each health-care setting restricted the number of clinical units that could participate in the project. The hospital chose its oncology and neuroscience units because these specialties had a reasonable nursing research base; nurses who acquired skills in research use would have other sources of evidence to use as a basis to change practice.

The second participating setting comprised a number of long-term, nursing-home, chronic-care, and rehabilitative units from which four sites were chosen: a geriatric rehabilitation facility, a chronic-care unit, and two nursing homes. This setting used the AHCPR clinical-practice guidelines as a foundation for skin-care protocols and monitored processes through its quality-improvement programs. Nursing staff used the Braden Scale and Staging classification as part of their practice (Braden & Bergstrom, 1994). This setting had done considerable educating in skin care.

The community-nursing agency had a number of dedicated wound specialists and enterostomal therapists (ETs) who had developed an active community consultation service for wound, skin-care, and pressure-ulcer management. They regularly provided wound-care classes to staff and consulted with individual nurses and clients. Clients for their prevalence study were drawn from four inner-city districts. The major diagnostic groups were oncology-related.

The profile developed for the practice environments was both positive and negative. Previous work with pressure ulcers in all agencies strongly supported the implementation of evidence-based initiatives. Nurses were familiar with the current information on pressure ulcers. We thought that familiarity with the clinical topic would free nurses to focus on the process and skills necessary for using evidence. We found administrative support and encouragement for evidence-based practice in all settings. This type of support has been reported as a key facilitator of research use by nurses (Funk, Champagne, Wiese, & Tournquist, 1991). The many barriers existing within the three settings were also similar to those previously reported (Funk et al., 1995). Throughout the course of the project all of the agencies were in the midst of health-care restructuring. At various times in the 3-year PWNP each participating setting underwent changes in their nursing model, bed closures, re-allocation of services, lay-offs, and early-retirement buy-outs. Practice envi-

ronments were assessed to be overwhelmingly influenced by the political, professional, and personal impact of the restructuring process. Clinical and administrative staff were transferred to unfamiliar areas of practice and, often, temporary positions, and these disruptions were associated with a perceived lowering of staff morale. This turmoil was a constant throughout the course of the project and served as the key ongoing barrier to evidence-based practice in the three settings.

Assessing potential adopters. The potential adopters' profile was mixed. Clinical staff experienced job insecurity and the predictable stress associated with it. They perceived that they had little time for thinking beyond the day-to-day demands of their practice. Yet despite this major barrier, we identified potential adopters who wished to participate. Interviews with staff revealed that they were interested in the project and in research use but were struggling with the changes brought about by restructuring. Fortunately, administrators and most clinicians had positive attitudes towards research use, and while they were not enthusiastic about what they perceived to be yet another skincare project, they were very interested in improving care.

Few members of the staff had baccalaureate preparation, thus little previous knowledge concerning research or the research process could be assumed. This barrier proved to be the focus of our interventions, since it was one barrier that was within the scope of the project's control.

Strategies to Enhance Evidence-Based Nursing Practice

The selection and timing of strategies were guided by Rogers's (1995) innovation-decision process as adapted by the OMRU and integrated with the literature on research utilization and research transfer (e.g., the work on diffusion, dissemination, and implementation by, among others, Davis & Taylor-Vaisey, 1997; Davis, Thomson, Oxman, & Haynes, 1995; Grimshaw et al., 1995; Lomas, 1993, 1994; Oxman, Thomson, Davis, & Haynes, 1995).

The innovation-decision process consists of five stages that potential adopters may go through before an innovation is established. These are: (1) *awareness* of the innovation, (2) development of positive *attitudes* towards the innovation, (3) cognitive *intention to use* the innovation, (4) *use* of the innovation, and (5) *continued use* of the innovation. Brett (1987) demonstrates that nurses move through this process.

We targeted implementation strategies to the potential adopters' stage in the innovation-decision process as set out by Logan and Graham (1998). Prior to initiating the project with clinical staff, we met with them to introduce it. Awareness sessions were repeated during the pretest data-collection procedure. Information sessions and news briefs were directed to the policy-makers in the settings and several mass-media approaches were used to raise city-wide awareness. These diffusion and dissemination strategies were aimed at the first two stages in the innovation-decision process and were intended to increase knowledge of the project and positive attitudes towards it (Logan & Graham; Rogers, 1995).

We used multiple implementation strategies to address the final three stages in the innovation-decision process, as multiple approaches are considered to be more effective (Grimshaw et al., 1995; Oxman et al., 1995). The first strategy involved the use of pressure-ulcer prevalence surveys. In all three settings, we provided a workshop for the clinical staff who volunteered to be surveyors — all of whom were registered nurses familiar with the clinical areas. They used the same data-collection instruments and similar procedures for comparing findings.

The Evidence-Based Nursing Practice Workshops marked the second strategic phase. The workshops, attended by 75 people over a 4-week period in November, were very successful. One was repeated in May of the following year with 33 attending. The participants were administrators, educators, nurse specialists, nurse researchers, registered clinical nurses, and registered practical nurses.

The first workshop was directed to nurses in formal leadership positions, to ensure their understanding of and support for the project. It guided the nurses through evidence-based decision-making and its relationship to practice. Workshop content included: the barriers and facilitators to evidence-based practice, methods for critiquing qualitative and quantitative research, development of clinical-practice guidelines, and establishment of a plan to support the staff in carrying out the project and to network with peers from the other participating agencies.

A 2-day workshop for clinical registered nurses shared the objectives of the first but with an emphasis on establishing a procedure for diffusion, dissemination, and implementation of clinical guidelines to peers. Kirchhoff (1982) notes that rallying the support of nurses who are considering a change to evidence-based practice to motivate others may facilitate the process of research utilization. We taught workshop participants the notion of "idea champion" and challenged them to return

to their units and assume that role with regard to evidence-based practice. The second day covered the pressure-ulcer prevalence data. Content included pressure-ulcer staging and classification, early intervention, prevention, and assessment of risk using the Braden Tool (Braden & Bergstrom, 1994). A treatment expert reviewed a wide variety of treatment modalities available for management of pressure ulcers at the sites. A number of stations allowed for hands-on evaluation of the products, including video and slide previews. During the workshop phase, the Nurse Consultant from the Ministry of Health visited the agencies and attended workshops at various times. She assumed a role of influence akin to that of opinion leader (Rogers, 1995). A 1-day workshop for registered practical nurses focused on the pressure-ulcer guidelines.

A final set of Evidence-Based Practice workshops for the clinical registered nurses was aimed at the process of accessing evidence and disseminating completed evidence-based clinical projects. More than 55 staff members attended and rated the final workshops as highly as the earlier offerings. The workshop facilitator noted that participants had more positive attitudes and seemed more knowledgeable about evidence-based practice and its link to professional nursing. The workshops provided an excellent opportunity for nurses across health-care settings to meet with colleagues and discuss issues of common concern. This is a foundation for nurses to guide the process of research transfer into practice on other clinical issues.

A third implementation strategy consisted of follow-up activities. We directed this approach to the final stage in the innovation-decision process, "continued use of the innovation." As a secondary workshop focus, we identified what participants felt the PWNP could provide as continuing support to help staff meet the PWNP objectives. Much discussion revolved around the support and access of research. As a result, we have established two initiatives. Members of the Clinical Epidemiology Unit (CEU) of the Loeb Health Research Institute have actively facilitated and supported the pressure-ulcer prevalence studies. In continuing support, the CEU maintains a database of studies related to pressure ulcers. A review and retrieval system was initiated, and this is updated every 6 months. We circulated key articles to the project settings. A research paper to review and share with colleagues is sent to participants every 6 weeks. In addition, project funds were used to purchase a subscription to a research-based nursing journal, selected by the Unit staff relevant to their focus of care.

Project Outcomes

While the findings of prevalence surveys had the potential to provide evaluation data, we were reluctant to allow the success of the PWNP to hinge on this outcome, because we were unable to guarantee that agencies would continue to conduct annual prevalence studies during the process of restructuring. In addition, pressure ulcers are considered to be a multidisciplinary problem and there was much activity over which we had no control.

Although we were able to assess and monitor various steps in the project from the local perspective, we were limited by the PWNP assignment of the evaluation to a university in a different city. Before-and-after survey methods were used for that evaluation. The final report is in progress (Ontario Ministry of Health, in progress). Preliminary results from the evaluation portion of that report indicate that nurses at the Ottawa-Carleton site reported an increase in knowledge about evidence-based practice and skin care. They also show an increase in reading of research articles. Comments about the workshops were generally favourable. There were a few negative comments about research and the time or money required to support the application of new knowledge.

Since initiation of the PWNP, we have noted substantive local change in attitudes and organizational culture to support the use of evidence at both the practitioner and organizational levels. For example, while planning a skin-care workshop, practitioners insisted on incorporating the latest evidence. Among sites, there is continued collaboration on skin-care projects and on new evidence-based projects. Independently, sites have initiated projects learned of through the PWNP network. Sites are using similar strategies to implement changes in practice, such as bowel-habit regimes and leg-ulcer management. Thus far, the community-nursing group has made the greatest strides, possibly because it had the fewest available resources at the outset. We are also very encouraged by the number of nurses involved in the project who are now pursuing baccalaureate and master's degrees. Several M.Sc.N. students have a skin-care research focus.

At the organizational level, the clinical guidelines on which the project was based have been adopted at the policy level. Examples include the adoption of a computer-based wound-assessment program in the long-term-care setting; the community agency continues to train nurses other than their ETs in the staging of pressure ulcers; and the tertiary-care setting is significantly changing its practice for assessing and

documenting skin-integrity problems. In addition, the tertiary-care site has been awarded a dedicated wound-care nursing fellowship and the long-term-care setting plans to establish a nursing fellowship integrating research use.

Conclusion

In undertaking the PWNP in our region, the OMRU provided the conceptual basis to design and implement interventions promoting evidence-based nursing practice. We noted both strengths and limitations in applying the OMRU. We found the OMRU useful because it addressed the key elements in the process of research use. This directed our focus, which was essential due to the complexity and short timeline as we worked across the very diverse health-care settings. The model was particularly helpful in determining existing barriers to and supports for the use of research, and thus permit the tailoring and timing of implementation interventions. In using the model, we gained invaluable direction in assessing the evidence common to our three agencies and drawing attention to the similarities and differences among the settings and the various practitioners. Because the model was intended to be used from multiple perspectives — for example, from the perspective of policy-makers, practitioners, and researchers — it met the needs of the various team members. Clearly, the resources available through the PWNP supported the use of the model.

Despite the overall value derived from the OMRU application, we were particularly challenged by the lack of succinct, reliable, and valid instruments designed to assess the barriers and supports related to the practice environment and potential adopters, and to understand perceptions regarding the evidence-based innovation. Short, precise tools are necessary for complex projects in the rapidly changing settings of busy practitioners and administrators. Our greatest limitation in using the model was the instability of assessments due to a rapidly changing practice environment. Finally, we were limited by the lack of available research testing the model. There is much work to be done in testing and refining the model. Locally, investigators are involved in several projects to do this.

In addition to the implications for research, we will continue to promote evidence-based practice related to skin care and other clinical problems. Notwithstanding the above shortcomings, we concluded that applying the OMRU to this complex nursing project helped achieve the goals of the project. We believe the OMRU has the potential to guide research use within and among other health-care agencies.

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Acknowledgements

Mapping the Research Utilization Field in Nursing

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L'intérêt accrue qui est porté dernièrement au domaine de l'utilisation de la recherche, lequel s'appuie souvent sur des notions de pratique reposant sur des preuves, fournit de riches possibilités quant à l'avancement de ce créneau des sciences infirmières. Bien qu'il existe, dans la profession, une documentation étendue sur le sujet, un examen approfondi révèle qu'une grande part de celle-ci est fondée sur des opinions ou des anecdotes et que l'élaboration de théories soutenue et génératrice de programmes, accompagnée de vérifications, a été menée, tout au mieux, de façon sporadique. Cet article présente un schéma conceptuel traitant de l'utilisation de la recherche et propose de mettre l'accent sur certains éléments d'étude d'importance : les fondements, les synthèses, les politiques et les interventions scientifiques, historiques et philosophiques visant à promouvoir l'utilisation de la recherche, et les résultats. En suivant cette voie, nous pouvons développer des approches différentes en matière de perspectives et de conceptualisation dans ce domaine. En exécutant les études et les programmes mis d'avant dans ce schéma, la profession peut, en collaboration avec les partenaires appropriés, réaliser d'importants progrès dans le domaine des études et de la pratique liées à la diffusion et à l'utilisation de la recherche, et ce à de nombreux niveaux du système de santé.

The recent increase in interest in the field of research utilization, often embedded in the notions of evidence-based practice, presents a rich opportunity to advance the field in nursing. While an extensive literature on the subject exists in nursing, close examination reveals that much of it is opinion and anecdotal literature, and that sustained and programmatic theory building and testing in this field has been sporadic at best. This article maps the field of research utilization, proposing that we focus on major areas of inquiry: scientific, historical, and philosophical *foundations, synthesis, determinants, policy, interventions* to increase research utilization, and *outcomes*. In so doing, alternative ways of viewing and conceptualizing this field are possible. In conducting the kinds of studies and supporting the kinds of programs identified in this map, nursing, in collaboration with appropriate partners, can significantly advance the field of research dissemination and utilization studies and practice at many levels in the health system.

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The past few years have seen a surge of interest in the field of research utilization. This interest has often focused on the broader field of *evidence-based practice* or *evidence-based decision-making*, of which research utilization is a special subset (Estabrooks, 1998; Stetler et al., 1998). Research utilization is, at its simplest, the use of research to guide practice, and is particularly concerned with the use of research evidence — i.e., the findings of scientific studies. In contrast, evidence-based practice includes, or ought to include, a much broader conceptualization of evidence than research evidence alone (Estabrooks, 1998). Organizations such as the Agency for Health Care Policy and Research (AHCPR) in the United States, the global Cochrane Collaboration, and the National Forum on Health (NFH), the National Centre of Excellence, and the Health Evidence Application and Linkage Network (HEALNet) in Canada have increasingly focused attention on how scientific evidence is used at various levels of decision-making in health-care practice.

Not since the large research utilization initiatives of the 1970s has there been such a rich opportunity to advance the field in nursing. Since the first nursing study related to research utilization appeared in the literature (Shore, 1972), a large nursing literature has accumulated on the subject. However, much of it is opinion and anecdotal literature, and it has a number of characteristics that suggest the profession has not yet been able to realize sustained initiatives that build and test theory in this area.

First, the literature is seriously limited by a scarcity of discussions at the conceptual level. The last in-depth discussions specifically addressing the nature, structure, and/or function of research utilization in nursing were those by Loomis (1985) and Stetler (1985). Second, there were fewer than 70 research studies published between 1972 and 1998, an average of 2.7 a year, with many years yielding none.[1] This publication pattern is illustrated in Figure 1. Further, an examination of those studies reveals little evidence of sustained programmatic research — it is rare to find either individuals or groups who have published repeatedly in the field.

Third, an explicit description of form and substance in the research utilization field could not be located. Such a description or map, were it available, could be used to visualize the field, to locate studies in it, to assess the potential contribution of a study or set of studies to knowledge development in the area, and to guide basic and applied research programs in the field. The perception by many nursing investigators that research utilization is exclusively an applied field of study with

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Figure 1   *Research Utilization Studies by Year*
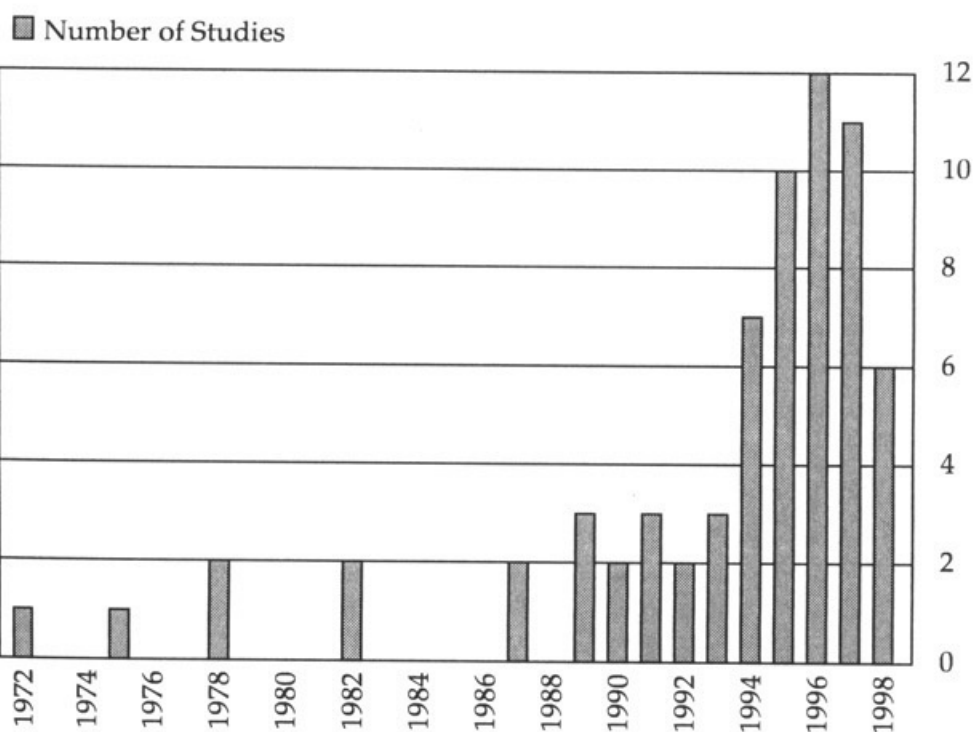
Note: 1998 studies to July 31.

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little or no requirement for basic, foundational studies may in part be responsible for the relatively disorganized state of the field today.

This article proposes such a map, with the goal of clarifying new and more comprehensive approaches to viewing and conceptualizing the research utilization field. A schematic of the map is presented in Figure 2. This schematic attempts to conceptualize research utilization as a field of both basic and applied investigation and as a field in a dynamic and interactive state.

The remaining sections discuss the elements depicted in the figure, beginning with foundational work and progressing through the areas of synthesis, determinants of research utilization, policy, intervention studies to increase research utilization, and outcomes. This article focuses on nurses, and does not address ongoing work in the area of consumer decision-making and consumers' need for and use of research evidence in making health decisions (e.g., Degner et al., 1997; Llewellyn-Thomas, 1997; O'Connor, 1997; O'Connor et al., 1998; Rothert et al., 1997; Sawka et al., 1998).

Figure 2 *Mapping the Field of Research Utilization in Nursing*

Policy Studies

Influence of:
- ▶ Research on policy
- ▶ Policy on research
- ▶ Policy on dissemination and utilization

Synthesis Studies
- ▶ Topical syntheses
- ▶ Methodological studies

Outcomes
- Practitioner outcomes
- System outcomes
- Consumer health outcomes

Scientific Foundations
- ▶ Conceptual structure of RU*
- ▶ Measurement science relating to RU*

Historical Foundations
- ▶ What has been considered legitimate practice knowledge?
- ▶ The history of ideas in nursing

Philosophical Foundations
- ▶ What is legitimate practice knowledge?
- ▶ Nature & structure of evidence

Strategies to Increase RU*
(Intervention Studies)
- ▶ Dissemination studies
- ▶ Research utilization studies

The Determinants of RU*
- ▶ Innovation attributes
- ▶ Individual characteristics
- ▶ Organizational factors
  - ▶ unit
  - ▶ institutional
  - ▶ regional
  - ▶ provincial
  - ▶ national
  - ▶ professional

*RU = Research Utilization

Foundational Work in the Field

One of the areas most central to sustained advancement in the research utilization field is described in Figure 2 as "foundational work." This foundational work has at least three dimensions: scientific, historical, and philosophical.

Scientific Foundations

Historically, nursing investigators have viewed research utilization as an applied area rather than as a field of inquiry with basic science requirements — i.e., as an area of original work itself. Investigators would implement the findings of others' research, develop and apply models of research utilization, and to some extent study influencing factors. In order to advance the research utilization field meaningfully, however, there must be advances in areas such as developing and refining its conceptual structure, developing the measurement science needed to undergird scientific studies, and developing a clear conceptual understanding of the nature and structure of evidence in nursing and of the relationship of research to evidence.

There are no studies or conceptual papers in the nursing literature and only rarely elsewhere (e.g., Dunn, 1983) that directly explore measurement issues. The empirical work in this field is currently plagued with measurement difficulties, which are likely to worsen if we do not explicitly undertake to resolve them. We have little idea of appropriate and relevant measures of research utilization — whether at single or multiple levels. For example, the most common approach to measuring research utilization does not differentiate among the kinds of research utilization, although it is implicitly an instrumental measure (Barta, 1995; Brett, 1987, 1989; Coyle & Sokop, 1990; Michel & Sneed, 1995; Varcoe & Hilton, 1995). If the findings of studies measuring only instrumental research use are used, we will underestimate nurses' overall research use, as we will not have accounted for either conceptual or persuasive use (Estabrooks, in press-b). Furthermore, this approach to measuring instrumental use developed by Brett (1987) is relatively complex, requiring an assessment of the extant user-ready research in the particular area each time it is used, in contrast to a global measure of research use (Estabrooks, 1997, in press-b). Which approach is better? Or does each have an appropriate usage? Are there other approaches that we need to develop?

We require both empirical and conceptual work designed to develop and test emerging mid-range theories on research utilization;

the development of these mid-range theories is the overarching goal of activity in this field. In the literature on innovation diffusion, Downs and Mohr (1976) put forward the idea that there was not a single theory of innovation, but that rather different types of innovation require distinct theories. Thirteen years and a considerable amount of research later, Poole and Van De Ven (1989) contended that no single theory can encompass "the complexity and diversity of innovation processes" (p. 638). Other authors in the innovation literature have reached the same conclusion (Damanpour, 1987, 1991; Mohr, 1987; Van De Ven & Rogers, 1988; Wolfe, 1994). While research utilization is not entirely synonymous with innovation diffusion, it is close enough that such advice should be heeded. It is quite likely that as we begin to understand the complexities of the determinants of research utilization and how they behave, different research utilization theories will begin to emerge and be tested.

Historically, nursing investigators have used a fairly limited set of approaches to study this field. Can we expand our repertoire of design approaches and modify our thinking in order to construct densely theoretical studies; studies whose express purposes include theory development and assessment; studies whose reports would include a discussion of where the particular study fits in terms of emerging theories of research utilization in nursing; studies running the gamut from naturalistic to rigid empirical assessment of theory; and studies that help us discover the structure of research utilization, its properties, its predictors, and its contextual variations?

The lack of clarity on the relationship between research utilization and evidence-based practice is also a potentially serious impediment. The current (and, this author believes, erroneous) tendency to equate the two could possibly lead us to rank-order evidence such that we devalue — or, worse, negate — non-scientific evidence. While some recent journal articles in nursing (DiCenso, Cullum, & Ciliska, 1998; Estabrooks, 1998; Kitson, 1997) suggest the need for a debate on the *evidence-based practice* movement, and by implication the nature and structure of evidence, and provide some fodder for this debate, there has not yet been a visible and collective debate on this topic in nursing such as is currently taking place elsewhere — e.g., in the *British Medical Journal,* the *Canadian Medical Association Journal,* and the *Journal of Evaluation in Clinical Practice.* In Canada, the NFH published an entire volume on evidence-based decision-making (Evidence-Based Decision Making Working Group, 1997). Additionally, HEALNet has adopted as one of its strategic directions for 1998–2002 the pursuit of a research program on evidence (http://hiru.mcmaster.ca/nce/research.htm). Its work will

be influential in determining how evidence is conceptualized, ordered, and ultimately valued in the health-policy environment in Canada. It is a matter of some urgency that nurses too take up a public debate on the nature and structure of evidence — one that develops in print and is voiced where we are gathered.

Historical and Philosophical Foundations

We ought perhaps to be viewing the often neglected areas of historical and philosophical inquiry as primary areas of insight into how we proceed in this complex field. Sound historical inquiry would go a long way in helping us to understand how, for example, nurses as a profession have conceptualized, legitimated, and controlled knowledge for practice and for professionalization. It would enlighten us as to what knowledge we have valued within different social and historical contexts; it would enable us to create a more planned future in the development and use of practice knowledge, including research knowledge; and it would surely expand our thinking in the evidence debate.

While historical examination would assist in laying a foundation for the future, it is to philosophy that we should turn for the debate on what ought to be — that is, what ought we value, create, legitimate, and control? What is and what ought to be the nature of practice knowledge? What parts of that practice knowledge are amenable to the strategies a good research utilization investigator might offer? Encouragingly, small philosophical groups are forming in Canadian nursing graduate programs, and this is where we must hope the seeds will be planted for the epistemological debates that need to occur. Such debates must find their way to basic education curricula in this country if we are to adequately prepare the next generation of practitioners, who will be working not under the shadow of the industrial revolution but rather under the glare of the cybernetic age.

Synthesis Work

Twenty years ago, the most significant problem in research utilization studies was the lack of available studies to utilize (Kreuger, Nelson, & Wolanin, 1978). While we have progressed a great deal, enormous gaps remain in the research that is available to guide nursing practice. There are insufficient synthesized research findings, such as meta-analyses, systematic research effectiveness overviews, and sound integrative literature reviews that would provide clinicians with digestible and readily accessible material.

The Cochrane Collaboration and the AHCPR have spurred a great deal of activity in this area, and in Canada considerable methodological work by nurse investigators is ongoing at McMaster University. However, the set of research methods used in nursing is wide-ranging. We have relatively few randomized clinical trials (RCTs) on which most of the meta-analytic work has been done, and large numbers of descriptive and qualitative studies. If we are to provide the substance that will support research-based nursing interventions, we must hurry on to the demanding methodological work involved in developing appropriate methods with which to synthesize or aggregate non-RCT studies, including qualitative studies.

It is also important to spend some time synthesizing the research utilization work that has been done, so that we have a clearer understanding of the state of affairs. How far have we come? Where are we now? Where do we need to go? Otherwise, we will be vulnerable to random development in the field. It makes little sense to proceed in any but a systematic manner in this field, along the way steering our graduate students and junior investigators in those same systematic directions.

The Determinants of Research Utilization

To date, the work in research utilization in nursing has focused almost exclusively on the determinants of research utilization — those factors, characteristics, and attributes of individuals, organizations, and innovations that influence the use of research. However, despite this focus, after nearly three decades of research the body of descriptive research identifying these determinants is underdeveloped and equivocal.

Individual Determinants

Most of the work to date in nursing has addressed individual determinants of research utilization — i.e., those characteristics possessed by the individual that influence their use of research findings in their work. Examples of these factors include: a *positive attitude* to research (Bostrum & Suter, 1993; Champion & Leach, 1989; Lacey, 1994; Rizutto, Bostrum, Suter, & Chenitz, 1994); *autonomy* (Funk, Champagne, Weiss, & Tornquist, 1991; Lacey; Rodgers, 1994; Walczak, McGuire, Haisfield, & Beezley, 1994); *awareness of agency policy* and *educational level* (Michel & Sneed, 1995); *conference attendance* (Coyle & Sokop, 1990); *cooperativeness and self-efficacy* (Kim & Kim, 1996); *job satisfaction* (Coyle & Sokop); *involvement in nursing research activities* (Bostrum & Suter; Pettengill,

Gillies, & Clark, 1994); and time spent *reading professional journals* (Barta, 1995; Brett, 1987; Coyle & Sokop; Kirchoff, 1982). However, when the relatively small body of work on these factors is examined closely, it yields little direction. Study designs and methods vary widely, sample sizes are small, and results tend not to converge on common recommendations (Estabrooks & Floyd, in progress). When the individual determinants that have been studied were rigorously and empirically tested to assess their influence on research utilization behaviour (Estabrooks, 1997, in press-a), only a positive attitude to research, in-service attendance, and the ability to suspend strongly held beliefs remained in structural equation models as significant influencing factors.

Organizational Determinants

Organizational determinants — those characteristics of health-care organizations, of units within those institutions, and of governance structures outside of those institutions that facilitate the dissemination and uptake of research findings — have been addressed to an even lesser extent than have individual determinants. Those organizational determinants that have been looked at include organizational size, administrative support, access to research, and time (Brett, 1987, 1989; Coyle & Sokop, 1990; Dunn, Crichton, Roe, Seers, & Williams, 1998; Funk et al., 1991; Rutledge, Ropka, Greene, Nail, & Mooney, 1997; Varcoe & Hilton, 1995). Other organizational determinants, such as complexity, centralization, presence of a research champion, tradition-alism, and organizational slack, have not, for the most part, been addressed in the nursing literature, although others, such as organizational analysts, have studied these characteristics extensively (e.g., Chakarbarti, 1974; Damanpour, 1987, 1988, 1991, 1996; Downs & Mohr, 1976; Fennell, 1984; Kimberley, 1981; Kimberley & Evanisko, 1981; Mohr, 1969).

Perhaps most importantly, there are no published reports of studies whose investigators have examined organizational culture at the local (unit) level, at multiple levels within the organization, or at the Regional Health Authority or Board levels. Unit and institutional culture are undoubtedly significant and multidimensional influences on research utilization behaviours. Elements such as unit norms, unit belief structures, local leadership and influence, rules of engagement, and interactions with other levels of the organization are likely embedded in the broader notion of organizational culture. Additionally, organizational factors such as a supportive administrative structure and ade-

quate time to use research can probably be well understood only within the context of local unit culture. For example, even in a very research-positive climate there may be rules of practice that supersede the will or intent of individuals to use research.

Another dimension of organizational determinants that has received no attention to date in nursing is the influence of institutional structures at the different jurisdictional levels on research utilization behaviour. For example, are there institutional structures in place to support research-based nursing practice at the organizational levels? at regional levels? at provincial or national professional-association levels? at union levels? in educational institutions? If there are, how effective are they? If there are not, how can we expect individual practitioners to be accountable for evidence-based practice?

Attributes of the Innovation

Attributes of the innovation are those characteristics of the research findings and of the clinical phenomenon that influence the uptake of relevant research. For example, the characteristics of the body of research on effective pain management as well as the characteristics of the phenomenon of pain itself will contribute to whether or not nurses make effective use of pain research in their practices. Unfortunately, there is little if any understanding of the influence of attributes of the innovation on nurses' research utilization behaviour.

First, unlike what has been done in other fields, there has been no study of the attributes of the innovation specific to nursing. Second, we do not know to what extent research findings as a product mimic innovations. In nursing, the concepts of innovation diffusion have been readily incorporated into conceptualizations of research utilization as if they were synonymous, but there is little evidence to support this, and little theoretical discussion in this regard. It seems reasonable that some of the attributes of innovations that have been considered to be important are also likely important attributes of nursing research and related clinical phenomena, but it seems equally likely that some are quite different.

Outside of nursing, Rogers (1983, 1995) proposes a list of five innovation attributes — *complexity, relative advantage, compatibility, trialability,* and *observability* — thought to be important to the adoption of innovations. Tornatsky and Klein (1982) report more equivocality in the influence of such attributes than Rogers's work suggests, and others have suggested additional and different attributes (Damanpour, 1988;

Dearing & Meyer, 1994; Kimberley, 1987; Van De Ven, 1986). These studies and conceptualizations of innovation attributes in other fields should serve to assist nurses in the conceptualization and study of innovation attributes. In particular, we need to expand our understanding of the parallels between innovation attributes and research attributes and between innovation attributes and the attributes of the clinical phenomenon.

Policy

Few, if any, studies have been published that address the relationship between nursing research and policy or between policy and research utilization. Policy holds promise as a strategy to facilitate research utilization. It also can function in many institutions as an impediment. The more we know about and understand these processes, the more effective we will be in both the use of policy to improve practice and the use of research to effect policy change. The earlier discussion of institutional structures (under **Organizational Determinants**) is fundamentally related to questions of policy. Is the current rhetoric (and hence, one could argue, at least the broad policy intent) of evidence-based decision-making in this country tied in meaningful ways to actual policy implementation? What policy instruments have been applied to create an evidence-based decision-making culture? Have these instruments been applied differentially or non-differentially? At what levels have they been applied? Have they been effective? What has been — and what should be — the role of regional boards, employers, professional associations, and labour unions in creating institutional structures that encourage and facilitate research-based practice? What is the profession's capacity to generate policy studies, to influence policy that affects dissemination and uptake of research in the health sector, and to marshal policy expertise among investigators and practitioners?

Strategies to Increase Research Utilization (Intervention Studies)

A second area (in addition to determinants) in which nurse investigators have conducted research is intervention studies (see Figure 2); however, there are few such studies. Examples of those that have been done include the work of Dufault, Bielecki, Collins, and Wiley (1995), who examined the effectiveness of a collaborative research utilization model directed towards the transfer of pain-assessment knowledge to practice; Hodnett et al. (1996), who examined the effectiveness of a marketing strategy geared to increasing nurses' use of intrapartum interventions on patient outcomes; Luker and Kenrick (1992), who evaluated

the effectiveness of an "information package" on the management of leg ulcers in the community; Rutledge and Donaldson (1995), who evaluated a 3-year project involving 20 service organizations and nearly 400 nurses in California; and Tranmer, Kisilevsky, and Muir (1995), who evaluated the effectiveness of a nursing research utilization strategy ("developmentally sensitive care") in a neonatal ICU.

Reports such as the above offer beginning evidence about the kinds of strategies that may or may not be useful in getting research used. However, intervention studies designed to examine strategies to increase research utilization are more likely to contribute to knowledge and theory development in this area if they are premised on (a) strong, less equivocal descriptive work (i.e., study of the determinants), (b) reliable outcomes work, and (c) sound theoretical and conceptual foundations. It will be especially difficult to design strong intervention studies until we have well-developed approaches to measuring research utilization.

Outcomes

Intervention studies in this area must be rigorously focused on patient/client health status, and not exclusively on the *intermediate* outcome of research utilization. While we have a great deal of work to do in the area of validly and reliably measuring research utilization — the practitioner outcome of interest in Figure 2 — we also have a considerable amount of work to do in identifying and measuring nurse-sensitive client and system outcomes. Additionally, in light of the discussion thus far, client and system outcomes must be sensitive to research utilization as a predictor variable if we intend to demonstrate that using research to guide nursing practice makes a difference in consumer outcomes. Nurse investigators who have programs in research utilization must begin to work early on with nurses investigators who have expertise in outcomes research.

The measurement of research utilization as a useful outcome is premised on somewhat different assumptions from those sometimes made in intervention studies (e.g., see Hodnett et al., 1996) that eliminate measurement of research utilization (or a research utilization index) as an intermediate variable. These studies directly measure the effect of a specific set of nursing interventions (brought about by a research utilization strategy) on client outcomes and eliminate the measurement of the intermediate outcome, research utilization. It can be argued that the retention of research utilization as an important

outcome variable in studies has value beyond the science of those studies. Such value lies in the central relationships of institutional structures, practices, and cultures to the work of nurses. For example, a measure of research utilization in an organization, or on units within that organization, is likely to be an important characteristic or indicator of organizational culture. We can speculate, for example, that it may be a characteristic of the magnet hospital (McClure, Poulin, Sovie, & Wandelt, 1983) and that, as such, its direct measurement is of added value.

Discussion

Mapping a field of inquiry in any domain is a complex undertaking. This first attempt to do so in the field of research utilization is designed to (a) clarify that a field of inquiry exists, (b) clarify that study in this field is best undertaken systematically from both basic and applied perspectives, and (c) encourage collaborative work among investigators. A reasonable next question is: Are there priority areas that we should address? There are many places on the schematic in Figure 2 to legitimately begin for those who are new to the field, and many places to locate one's own work for those already engaged in this area of research. I began with empirical work that focused on elements of both scientific foundations and determinants, and attempted to develop and test beginning research utilization theory (Estabrooks, 1997, in press-a, in press-b). From that experience, I became convinced that the descriptive and foundational bodies of research are so underdeveloped that we must attend to them with some urgency in order to be able to design sound studies that develop and test strategies to increase research utilization (i.e., intervention studies).

How should we proceed so that our approaches are systematic? Although it is difficult to set priorities for activity in the field, a proposed set of reasonable priorities includes the following:

- develop a more thorough and confident understanding of the determinants of research utilization, with an emphasis on the different levels of organizational determinants, especially local culture, and the interactions of different groups of determinants in different clinical contexts;

- conduct foundational studies, both theoretical and empirical, that address, as priorities, the conceptual structure of research utilization and its measurement;

- develop a better understanding of individual determinants, with a view to targeting interventions early in educational programs when they are most likely to have an effect, especially if, as we suspect at this stage, these determinants are largely related to attitude, thinking styles, and belief structures;

- conduct intervention studies that are informed by descriptive work, by measurement work, and by related outcomes work, taking care to reflect on *the nature and structure of nursing work* when considering different intervention strategies;

- build functional partnerships with those individuals and institutions (both within and across disciplines and countries) whose expertise is outside the area of research utilization per se but is central to the advancement of a research utilization agenda — e.g., outcomes researchers, policy analysts and experts, political scientists, organizational analysts, clinicians, and clinical investigators.

Two provisos should be added to this discussion. We need to be cognizant of the tendency in the past to study only the utilization of *nursing* research findings. The only plausible reason for restricting study in this area to nursing research seems to be a professional one, intended to advance the legitimization both of nursing as an academic pursuit and of our research. However, nurses need a full repertoire of theoretical and practice knowledge, of which nursing is but one component. Therefore, we should be interested in the use of any and all kinds of research that are relevant to the work of nurses and to better health outcomes for patients and clients. This will require us to work closely with practising nurses and consumers as we develop our understanding of not only what practice knowledge they require, but in what forms they can best use it.

Second, if we are to advance systematic and programmatic study in this field, the profession has considerable work to do to build capacity. The agenda outlined here is ambitious and will require the cooperative work of many individuals and institutions. To date, at least in Canada, we have no readily identifiable centres or programs and very few individuals who espouse expertise in research utilization. While we are aware informally of expertise in some of the sub-areas discussed, we have not often made this explicitly known to potential graduate students or post-doctoral trainees, who are the most likely sources of future capacity. However, because of Canadian funding-agency decisions in recent years to focus more on knowledge dissemination and

research transfer and uptake, we have considerable potential to attract and build the needed capacity, as well as to conduct the high-quality studies needed to advance the science of research utilization.

We have an extraordinary window of opportunity that has been opening in Canada since the NFH called for a culture of evidence-based decision-making earlier this decade. We should not squander the opportunity. We should focus on getting on with the agenda — systematically, programmatically, and collaboratively. Doing so could create considerable synergy in this field, setting the stage for observable progress in the decades ahead.

Endnote

[1]While the literature reviewed for this article ranges beyond the nursing literature and has in the past included searches of several databases (e.g., Medline, HSTAR, PSYCHINFO, ABI-INFORM, Dissertation Abstracts, SSCI), the nursing literature reviewed, and to which this statement refers, was examined by using the specific strategies described below. Past searches have also included (a) manual searches of the print version of CINAHL from its beginning to 1982 using the terms *research use, research, research utilization, innovation diffusion,* and *dissemination,* and (b) manual scanning of all reference lists at the end of all retrieved nursing articles. The literature search for this article was undertaken to ensure that all studies were identified. The criteria used to determine whether an article was a study were generous — i.e., if authors stated they had done a study and there was any evidence they had measured or intended to measure research utilization (including dissemination, innovation diffusion, adoption, transfer, uptake, or use) or a related dimension (e.g., barriers to research utilization), it was considered a study. Qualitative studies were also counted if they examined research utilization. In conjunction with a reference librarian, the CINAHL database was searched from 1982 through December 1998 using the following terms:

Diffusion of innovation	(subject heading)	
research utilization	(textword)	
Research, nursing	(subject heading-exploded)	OR

and

transfer, practice or practise	(textwords)
Research AND transfer	(subject heading and textword)

Newly retrieved articles were all from 1998; the reference lists of these were manually scanned. Excluded from this count were articles that describe the implementation of a research-based practice on a nursing unit — unless there was an explicit evaluation and some attempt to measure research utilization. These largely anecdotal articles appear primarily in practice journals or research journals targeting clinicians.

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Designer's Corner

The Use of Metaphor Graphics to Depict Sleep Research Results

Judith A. Floyd

The major barriers to research utilization in nursing are well documented (Polit & Hungler, 1998). One of these barriers is the complex nature of research. Many nurses are not familiar with the highly technical language of research and the types of graphics that researchers use to communicate research findings to one another. To facilitate the increased use of research, it is critical that mechanisms be developed to improve dissemination of research results to nurses in clinical practice.

Background

In an effort to find alternative approaches to displaying research results, "metaphor graphics" (Cole, 1988) was explored. Cole introduced metaphor graphics a decade ago as a novel way of graphically representing knowledge. He proposed that, as an alternative to traditional line graphs and pie-charts, data be summarized using visual metaphors — i.e., abstract signs and symbols — to show patterns and convey meaning. Viewing human beings as imperfect processors of information who tend to reason using pattern recognition and mental models, Cole hypothesized that visual metaphors would improve the uptake of scientific information.

Cole (1988) recommended that metaphor be used as an adjunct to commonly employed methods for communicating results of primary studies. Because the information to be conveyed is complex, he envisioned that its users would require instruction in interpreting metaphorical displays. His research suggested that clinicians could learn to "read" metaphorical displays of data more quickly than traditional graphics and would retain the information longer (Cole, 1990,

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1994; Cole & Stewart, 1993). Cole concluded that representing data metaphorically helps the data user to create mental models by facilitating pattern recognition and attachment of meaning. Overall, his research indicates that metaphor graphics are effective with complex as well as simple data sets, are useful for pattern detection as well as single-element reporting tasks, and can be used with novice as well as expert clinicians (Cole & Stewart, 1994).

The Current Challenge

Systematic reviews are emerging as important aids in the research utilization process. They aggregate, compare, and help integrate research results. However, the presentation of information from systematic reviews has its own challenges: How can clinically and administratively active nurses be helped to more readily grasp and retain scientific knowledge generated from systematic research reviews? Would the use of metaphor graphics increase dissemination, comprehension, and retention of research review results among clinicians?

Example

A recent review of research on sleep promotion in adults identified published studies of interventions to help adults initiate and maintain sleep (Sigma Theta Tau International, 1997). Information on the number of times each intervention had been studied, the effectiveness of the interventions, and the quality of the studies has been presented in both text form (Floyd, in press) and tabular form (Floyd, Falahee, & Fhobir, in press). It is expected that other researchers and advanced-practice nurses specializing in evidence-based practice will find these publications useful; however, presentation of the results of the review to students and nurses in our region of the United States suggested the need for alternative ways of reporting findings of systematic reviews to students and nurses focused on clinical practice.

The principles provided by Cole's work on metaphor graphics were used to display results from the systematic review of sleep-promotion research. These principles were used to create "meta-graphs" — graphical displays of systematic review results — for the sleep-promotion knowledge base. The patterns to be recognized by the viewer were the quantity and quality of research that underpins interventions. The meanings to be conveyed were the relative differences in research support among the interventions and the degree of improvement expected from each intervention. For example, viewers of the Sleep

Figure 1 *Meta-Graph Depicting Interventions for Facilitating Sleep Initiation*

Interventions	Design and Findings						
Teach somatic relaxation	‡ □	+ "□"		‡ ⬡	‡ "⬡"		‡ "○" / ‡ "○"
Teach cognitive relaxation					‡ "⬡"	‡ "○" / ‡ "○"	
Teach sleep hygiene						+ "○"	
Teach personal control of noise			− ⬡				
Use white noise			n.s. "⬡"				
Provide quiet environment			‡ ⬡	‡ "⬡"			
Recommend hot baths			n.s. ⬡	‡ ⬡	‡ "⬡"		
Recommend lukewarm baths					n.s. "⬡"		
Encourage bedtime routine	‡ "▲"	‡ "▲"	‡ "▲"				
Limit frequency of naps	n.s. "▲"	n.s. ▲					
Limit duration of naps	+ "▲"						
Eliminate naps	+ "▲"	‡ "▲"	n.s. □				

Initiation Meta-Graph (Figure 1) should be able to see the amount of research conducted on the effectiveness of each of 11 interventions, the strength of each study, and the effect of an intervention — when it has been found to be effective.

Explanation of Figure 1

The following abstract symbols were used to depict sleep research results: A row of boxes was used to represent the research domain for each intervention. Because of the number and nature of studies examining sleep-initiation interventions, 10 boxes were required. The first three boxes were used for correlational studies, the next two for one-group pretest-posttest (i.e., pre-experimental) designs, the next three for true experiments, and the last two for meta-analytic studies. Triangles represent correlational studies; squares, pre-experimental designs; pentagons, quasi-experimental designs (of which there were none for the sleep-initiation studies); hexagons, true experiments. The more sides the figure has, the more confident the clinician can be that the intervention, rather than some other factor, accounted for the effect on sleep initiation. Circles represent meta-analytic studies and suggest maximum confidence in causal inference, with their inferred number of sides as infinite.

Occasionally a study's design is such that the causal link is questionable. Such studies are shaded. All triangles are shaded because they represent correlational studies and the shading is meant to remind meta-graph users that correlation is not causation. Other geometric shapes are shaded only if internal validity is judged to be exceptionally low because of major design flaws. There were no examples of this among the studies on the Sleep Initiation Meta-Graph. On other meta-graphs, when internal validity was markedly lower than would be expected given the nature of the design, notes were included with the meta-chart identifying the specific threats to internal validity.

Quotation marks (" ") were placed around the geometric figures when self-report was the only method used to measure the amount of change in sleep initiation. The figures were left unadorned if objective measures were used. This allows the meta-graph user to consider whether improvement was measured in subjective ways only or whether objective measures of improvement were also used for a particular intervention.

The direction and strength of the finding is shown by signs placed above the geometric figures: a plus sign (+) for positive effects on sleep

initiation, a minus sign (–) for negative effects, and "n.s." for non-significant changes in sleep initiation. The number of pluses and minuses indicates effect size: small (+ or –), medium (++ or – –), or large (+++ or – –). Effect sizes are calculated from statistical information in each study, and Cohen's (1988) "Rules of Thumb" are used to identify effect sizes as small, medium, or large.

Table 1 lists themes and patterns identified by nurses who viewed the meta-graph shown in Figure 1.

Table 1   *Examples of Patterns and Meanings Identified by Users of the Sleep Initiation Meta-Graph*

- Somatic (muscle) relaxation is the most studied intervention.
- Relaxation approaches produce large, self-reported improvements.
- Only one intervention, "personal control over noise" (Topf, 1992), appeared to have a negative effect.
- Bedtime routines and variations in napping have the weakest research base.
- The majority of the studies measure sleep improvements using self-report measures.

Sleep-promotion meta-graphs are currently being field tested to evaluate their comparative effectiveness in displaying the results of research reviews. Much needs to be learned about the conditions under which metaphor graphics can replace or enhance traditional graphics, tables, and text; however, their informal use in classroom and in-service educational settings suggests they may increase interest, speed of comprehension, and retention of information on the research base underpinning sleep-promotion practices. If proven effective, meta-graphs may be a useful adjunct to traditional methods of disseminating review results to students and nurses in clinical practice.

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Happenings

Evidence That Informs Practice and Policy: The Role of Strategic Alliances at the Municipal, Provincial, and Federal Levels

Gina Bohn Browne

History

The McMaster System-Linked Research Unit on Health and Social Service Utilization was launched in 1991 to compare the effects and financial costs of innovative intersectoral, comprehensive services with the usual sectoral, fragmented approaches to serving vulnerable populations. The Unit's investigators were mandated to conduct research relevant to 16 health- and social-service entities, both "partner" and provider, in two regions of Ontario. The partners helped to plan the relevant research agenda. These included visiting nurses, family practices, and regional departments of social service and public health, as well as the District Health and Social Planning councils of the two regions, Hamilton-Wentworth and Halton (Browne, Watt, Roberts, Gafni, & Byrne, 1994, 1997).

Rationale for Strategic Alliances

In the area of community health information, there is an important distinction between the policy/planning environment and the research environment. In the former, the community requires access to information so that it can assess the need for and impact of health programs,

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but it often lacks the methodological and analytical skills necessary for valid interpretation of health data. In the research environment, on the other hand, those involved in activities around collecting and analyzing community health data are often ill-informed about the informational needs of policy-makers and planners. As a result, a vast amount of the health data they produce is irrelevant, inaccessible, or incomprehensible to planners and policy-makers. Synthesis and dissemination strategies are required to link policy/planning decisions with research evidence (Battista, 1989; Chalmer, 1993; Frank, 1992; Gerbarg & Horwitz, 1988; Goldberg et al., 1994; Goodman, 1989a, 1989b; Haynes, Sackett, Gray, Cook, & Guyatt, 1996; Lomas, 1990, 1997; Roberts, Browne, & Gafni, in press; Sacks, Berrier, Reitman, Ancon-Berk, & Chalmers, 1987; Zucker & Yusef, 1989). The existence of these two organizational cultures, each with its own value system and each lacking knowledge of the other, prevents:

- appropriate diffusion of community health information,

- development of health policy and planning based on knowledge (evidence information) from the target community and other jurisdictions, and

- effective information transfer between policy/planning and research.

It was reasoned that a research unit as a strategic alliance of investigators and a number of community health- and social-service providers, planners, and policy-makers would not only foster the production of relevant information but also facilitate its dissemination and use in decision-making.

Projects as Joint Ventures

The effectiveness and efficiency of proactive joint service ventures were tested among people in co-existing chronic circumstances such as chronic illness, poor adjustment, functional disability, school problems, poverty, joblessness, psychiatric disturbance, poor problem-solving ability, and charged with the care of cognitively impaired relatives. Some 45 projects, costing more than $9 million in peer-review funding over 8 years, have resulted in many co-ordinated, intersectoral interventions. Some of these have been aimed at improving the coping ability of the chronically ill, the functional capacity of elderly people being seen by family physicians, the school adjustment of children, the functional outcomes of disabled and chronically ill people receiving

community rehabilitation services, and, most recently, health and recreational services for mothers and children on welfare.

The innovative linked approach to service delivery co-ordinates services previously administered in a piecemeal way: those that had been delivered autonomously are now often co-ordinated with another service and delivered as part of a joint venture.

Through the strategic alliance, investigators and partners have learned that there can be more amid less; balance without compromised quality; simultaneous delivery without homogenization. Rigour can co-exist with relevance; impartiality can co-exist with advocacy. Agencies can participate in joint ventures without one threatening to take over the other. Research funding from third-party government and private sources can only enhance the enterprise and increase the number of services available to the public. "It can be otherwise."

Synthesis of Findings

We have learned that the majority of people with chronic illnesses lead full and independent lives; only a small proportion are poorly adjusted or become dependent on formal services. Similarly, the majority of people with chronic illness adjust without a change in their emotional status or their social role (Arpin, Fitch, Browne, & Corey, 1990; Cassileth et al., 1984). A small proportion of people with chronic poor health or in chronically poor social circumstances consume a large proportion of the formal services offered (Browne, Arpin, Corey, Fitch, & Gafni, 1990; Browne, Humphrey, Pallister, & Browne, 1982; Judd, Browne, & Craig, 1985).

Studies completed by the Unit have resulted in a number of important observations:

1. Emotional and social function (Arpin et al., 1990; Browne et al., 1982; Browne et al., 1990; Crook, Tunks, Rideout, & Browne, 1986; Judd et al., 1985), as well as attitudinal factors such as the individual's interpretation of being ill (Browne et al., 1988; Byrne et al., 1996; Crook, 1994; Hay, Browne, Roberts, & Jamieson, 1993; Weir, Browne, Tunks, Gafni, & Roberts, 1992), combined with social-support factors such as family function (Arpin et al.; Broadhead et al., 1983), explain 34% (Browne et al., 1982; Browne, Roberts, Weir, et al., 1993; Cassileth et al., 1984) to 57% of the variance in poor adjustment of the chronically ill to their situation.

2. Poor adjustment to chronic illness is, in turn, a leading individual characteristic related to the high use of all types of services (Browne, Roberts, Gafni, et al., 1993; Crook et al.).

3. When left untreated, poor adjustment is related to persistently high use of services (Arpin et al.; Browne, Gafni, Roberts, & Hoxby, 1995).

4. People who are high users of primary- and secondary-care services are high users of other services, and vice versa (Browne, Roberts, Weir, et al.; Roberts et al., 1995).

5. Proactive (health promotion) and treatment interventions in community-based health- and social-service agencies can improve or maintain the independence of the chronically ill in spite of disadvantages such as poverty or synergistic risks such as depression, while reducing expenditures on health services (Browne, Roberts, Gafni, et al., 1993; Browne, Roberts, Gafni, et al., in press).

Despite the diversity of information produced, the qualities of effectiveness and efficiency are evident. Services are more effective and less expensive when their direction is proactive, when their scope is pervasive, when their timing is preventive and predictable, when they are respectful and responsive to changing circumstances, and when they strengthen the factors that determine health.

Dissemination and the Merging of Cultures

Through the strategic alliance at a regional level, Unit information is produced and interpreted by the relevant stakeholders, who digest, mould, and apply the findings to suit their current regional circumstances. This process of dissemination, uptake, and digestion occurs at regional workshops involving the relevant stakeholders in the regional agency.

Increasingly more national and international attention is being given the synthesis evidence from research (e.g., Cochrane Reviews, Systematic Reviews) and its dissemination and use in planning and policy-making (Battista, 1989; Chalmer, 1993; Frank, 1992; Goldberg et al., 1994; Lomas, 1997).

The literature identifies three components necessary to the transfer of evidence from research to decision-making: (1) knowledge base — a body of identifiable and replicable research evidence; (2) institutional or organizational arrangement — actors or groups of actors involved in a policy issue; and (3) motivating values of the actors in bringing the issue to public attention (Fooks, 1989).

All three components are involved in the Unit. In a literature review, Lomas (1993) identifies four approaches to ensuring that research findings flow into decision-making: (1) the social-influences framework (Mittman, Tonesk, & Jacobson, 1992); (2) diffusion of innovations (Coleman, Katz, & Menzel, 1966; Dixon, 1990; Greer, 1988; Limerick & Cunnington, 1993; Rogers, 1983; Stocking, 1985); (3) adult-learning theory (Fox, Mazmanian, & Putnam, 1989; Gree & Eriksen, 1988); and (4) marketing (Gree & Eriksen; Kotler & Roberto, 1989).

1. The behaviour frameworks of decision-making underlying the social-influence perspective hold that the judgement and beliefs of peers play a major role in the evaluation of new information (Mittman et al.). This approach suggests that local norms and social modelling take precedence over acquisition and application of information by an isolated individual.

2. Diffusion research focuses on the way in which medical innovations actually find their way into health practices (Coleman et al.; Greer; Limerick & Cunnington; Rogers; Stocking). The investigators highlight: the importance of closed communities of providers and of product champions and opinion leaders (Dixon); the dynamic nature of diffusion, wherein modification and adaptation to local circumstances are part of a staged process of adoption (Stocking); and the need to isolate characteristics of an innovation and identify its "relative advantage," "compatibility," "complexity," "trialability," and "observability" (Rogers).

3. Adult-learning theory highlights the importance of personal motivation, rather than coercion, in fostering sustained behavioural change (Fox et al.). Education and learning help predispose decision-makers to consider change, or help reinforce change, but they rarely actually foster change (Gree & Eriksen).

4. Marketing approaches use social-marketing techniques to sell health promotion to the public (Kotler & Roberto). The principles of this approach derive from advertising and the literature on persuasive communication. Five attributes of communication are consistently important: the "source," the "channel" or medium of presentation, the content of the "message" itself, the "characteristics of the audience(s)," and the "setting" in which the message is received (Winkler, Lohr, & Brook, 1985).

Dissemination may take various forms: oral presentations and documents tailored to specific audiences; use of media (Domenghetti et al., 1988; Soumerai, Ross-Degnan, & Kahn, 1992); scientific publications;

presentations at scientific meetings; and introduction of research findings into the agency's ongoing quality-improvement activities (Burns et al., 1992; Kritchevsky & Simmons, 1991). In a literature review, Lomas (1993) found that research findings are likely to result in changes in provider behaviour at the local level when attention is paid to "the message and its source," "the communication channels," and "the implementation setting." Other authors have also reviewed this literature (Agency for Health Care Policy and Research, 1992; Davis, Thomson, Oxman, & Haynes, 1992; Lomas et al., 1991; Lomas & Haynes, 1988; Mittman et al., 1992; Reynolds & Chambers, 1992).

The research for "the message and its source" should be synthesized by a credible, influential body and packaged in a "user friendly" way, with the message justifying the need for change in comparison with existing approaches, norms, and concerns — that is, it should represent a form of persuasive communication. In addition, the implied change should be implementable within flexible parameters and within the means of the target group (Lomas, 1993).

Regarding "the communication channels," the existence and significance of the research findings should be communicated to a variety of providers, consumers, and policy-makers both within and outside the community; respected, influential local exemplars should be shown to be considering the findings or actually in the process of applying them (Lomas, 1993).

Finally, to ensure that the disseminated research findings are implemented, an opportunity should be presented to explore their implications in a personal encounter with either an influential colleague or a respected outside authority (Lomas et al., 1991). Application of the findings should not conflict with the economic or administrative incentives of the provider's working environment or with the expectations of consumers or the community (Lomas, 1993; Lomas et al.).

Utilization: Decision-Making in Planning and Policy Development

Research information is but one scientific input to the decision-making process. Results must be relevant to current questions, translated, interpreted, and synthesized with assessments of values/ideologies and institutional realities/logistics. The use of research information in policy-making is in part determined by how that information does or does not resonate with individual and group values, and the use of frameworks that do or do not facilitate that process of resonance. The central concepts of a framework for explaining use of research infor-

mation are elaborated elsewhere (Fooks, 1989), including in an analysis of how health-services research underlies much of Canada's health policy (Lomas, 1990, 1997).

Figure 1 illustrates three additional components of dissemination: the audience, the medium, and the channel.

Figure 1 *Audience, Medium, and Channel*
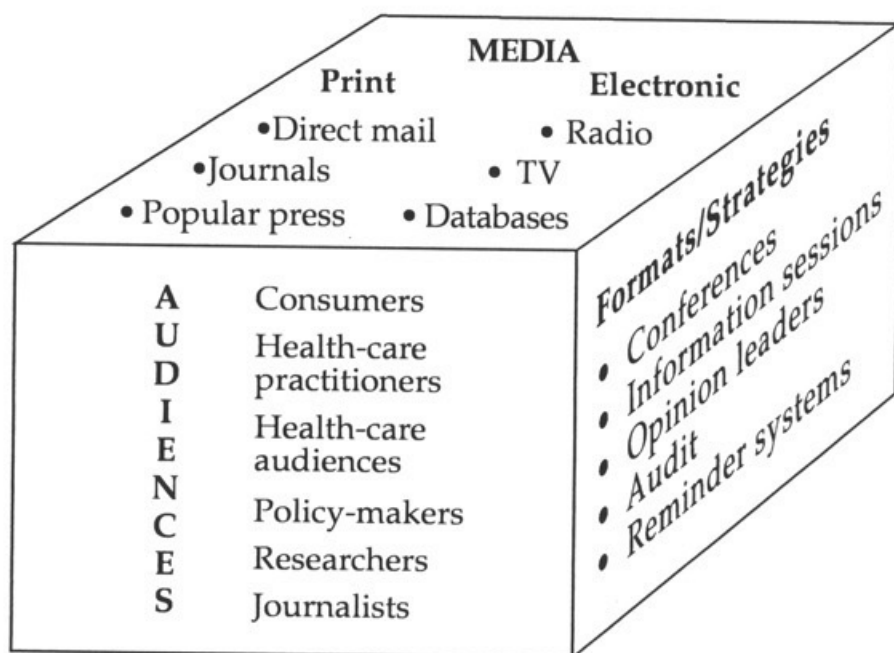
The key audiences are government decision-makers, health-care practitioners, and the receptor sites (government, national organizations) most likely to use the information. Multimedia and other formats should be matched to each audience.

Production, Dissemination, and Use of Information on More Effective Ways of Serving Single Parents and Children on Welfare: A Case Example

A public relations firm was hired to condense two of the Unit's project reports into a digestible message. They prepared the following communication:

> The System-Linked Research Unit on Health and Social Service Utilization of McMaster University, with major funding from Health Canada, published two studies in December 1998.

The studies, "When the Bough Breaks" and "Benefitting All the Beneficiaries" (Browne et al. [Browne, Byrne, Roberts, Gafni, & Watt, 1999, in press]), concluded that providing additional health and social services to mothers of social assistance families and making quality childcare and recreation services available pays for itself in a relatively short period, and produces more permanent beneficial outcomes in families at risk. The methodology of the two studies is more completely dealt with in the reports and their abstracts, but the research consisted of examining 765 households comprising 1,300 children aged 0–24. The research unit, headed by Dr. Gina Browne, made a number of key findings:

- Half of the heads of sole-support families suffer from mental health problems. Assisting clients with depression and other disorders gives them the self-esteem and confidence they need to contemplate exiting social assistance.

- Offering a full range of services to families — such as public health nurse visits for mothers and subsidized recreation for children — produced social assistance exit rates of 25% compared to 10% for those receiving no supplementary services.

- The cost of provision of additional public health nurses is more than offset by a reduction in inappropriate and more expensive medical services employed when the subjects sought out help for themselves; i.e., emergency visits, specialists, hospitalization.

- Offering recreational services helps psychologically disordered children achieve social, physical and academic competence at a rate equal to a non-disordered child. Recreation paid for itself through reduced use of social and health services — probation, child psychiatry, child psychology and social work.

- Even providing a partial menu of supplementary services produced greater social assistance exit rates compared to parents who did not receive the service:

  - subsidized recreation alone; 10% greater exit rate
  - public health visits alone; 12% greater exit rate
  - employment retraining alone; 10% greater exit rate

Program Description

The demonstration project consisted of two broad service dimensions used to augment employment retraining for single parents and their children on welfare.

- Increased visitation by public health nurses. Primarily the PHN's were asked to identify and deal with mental health issues — par-

ticularly depression experienced by mothers, but also behavioural and other health issues experiences by all family members.
- Provision of subsidized recreation programs to children and youths. The services were supplied through access to a local network of recreation providers, including the YMCA and other not-for-profit youth agencies.

The study worked with families having children of all ages, but the bulk of the study group consisted of children and young adults aged 6–21. As mentioned earlier, groups who received both recreation and increased access to public health nurses showed the most significant increase in exit rates from social services — up to 15% more. Enhanced access to a public health nurse alone yielded an increased exit rate of 12%.

Costing Considerations

The study concludes that a broad roll-out of the recommendations contained in Browne et al. [1999; Browne, Byrne, Roberts, et al., in press] would be revenue-neutral in the short to medium term and would produce, in the longer term, considerable savings to the social services system. Using the Regional Municipality of Hamilton-Wentworth as the example, the unit was able to project a rapid payback based on the following methodology:

Cost of Additional Services

The three key costing components referenced in the study are:
- Additional recreation co-ordinators who would stream children and young persons into age-appropriate recreation programs.
- The cost of providing those recreation programs.
- Increased access to public health nurses.

Using Hamilton-Wentworth as a model the caseload dimension was identified as follows:
- Total Social Services caseload
  - 6,000 sole support families
  - 12,000 children of all ages

Personnel requirements were identified as follows:
- Recreation coordinators = 15
- Caseload 6,000 = 400 per coordinator
- Public Health Nurses = 75
- 50% of 6,000 families have mental health issues
- 80% are willing to see a PHN = 2,400 cases
- Caseload = 32 per PHN.

Investment Required:

- 15 recreation co-ordinators @ $40,000 $ 600,000
- 75 Public Health Nurses @ $50,000 $ 3,750,000
- Recreation Placements 12,000 @ $170/yr $ 2,040,000

Total Investment $ 6,390,000

Payback of Investment

The following program payback calculation addresses payback to the social service system alone. It assumes the costs of Public Health Nurses are borne by the Social Services infrastructure — although it is more likely this cost would involve Health, possibly reimbursed through transfers. Further, in calculating the benefit to the system of social service exits, we have used the direct social assistance payment component only.

One Year Payback Model

Program Investment = $6,390,000
Annual saving per family exit = $12,000

Exits required to amortize investment = 533 families or 9% of the Hamilton-Wentworth social service caseload. As noted above, the study predicted exit rates of 20 to 25% utilizing the above supplementary services.

In the case of the health care system the study indicated that the cost of additional public health nurses was more than offset by decreases in the inappropriate use of more costly medical services such as emergency room visits, specialist referrals and other medical costs. There is a saving in the correctional system in the form of fewer police, court and probation interventions.

An unexpected but additional benefit comes from the screening process used to determine eligibility for additional public health nurse visits. Caseworkers are able to identify a stream of clients who possess requisite job-readiness for placement in Ontario Works (OW). This is particularly valuable as OW begins to interact with the private sector where there will be greater emphasis on job readiness in accepting placements. A fall provincial roll-out would require an investment of between $120 to $130 million.

Policy Implications

The study provides an encouraging approach in seeking more permanent solutions to systemic dependence on social services. Its underlying philosophy of redirecting direct payments into supplementary supports seems very much in keeping with other

initiatives presently underway or contemplated by the government. The investments required relative to the overall social service envelope are modest. The estimated payback interval is surprisingly short.

Dissemination and Utilization Activities

Unit meetings and workshops were used to help shape final interpretation of the data. This process served immediately to acknowledge the importance of social influence (Mittman et al., 1992) in acquisition and application of information, diffusion of innovations by closed communities of providers undergoing a staged process of adoption (Coleman et al., 1966; Dixon, 1990; Greer, 1988; Limerick & Cunnington, 1993; Rogers, 1983; Stocking, 1985), and adult learning theory (Fox et al., 1989; Gree & Eriksen, 1988), as well as the importance of persuasive education in precipitating behavioural change.

As partners and investigators discussed the results, there emerged new policy initiatives allowing social-service commissioners to apply findings in practice. Dissemination, digestion, and uptake occurred simultaneously throughout the Unit. Partner agencies advised provincial and regional decision-makers on social-marketing techniques, offering presentations to regional health and social-service committees. A provincial interministerial meeting was held to discuss the implications of the findings for the re-allocation of funding and to advise on current initiatives and regulations concerning single mothers on welfare.

An appropriate next step provincially would be simultaneous field trials of the Browne et al. methodology in a number of jurisdictions. The social-service commissioners recently examined the Browne report, and several have indicated their interest in rolling out trials in their communities. In some cases funding may come from the unconditional National Child Benefit being made available to municipalities. The province might want to contemplate accelerating this process by directing a portion of its share of the funding, especially to those communities where other pressing social-service needs may preclude the use of National Child Benefit funding for new initiatives.

The Ontario Report was disseminated federally because NHRDP and Children's Mental Health of Canada were the primary funders, along with the Hamilton Community Foundation. After dissemination via national television and journal venues, it is now being used to inform policy in the provinces of Nova Scotia and Prince Edward Island.

Considerable time, effort, networking skills, and an inclusive method of working — as well as scholarly publication — are required in carrying out these dissemination and utilization functions. Additional strategic alliances of professional associations and government offices are being used for the purpose of dissemination, with inclusion and ownership of findings offered in exchange. Participating organizations include the Sparrow Lake Alliance, the Canadian Council on Social Development, the National Council of Welfare, and the Ontario Association of Children's Mental Health Treatment Centres. Enhanced funding for dissemination, personnel, and activities is acknowledged in the 1996 NHRDP Program Funding update. In addition, funding is now available to test the comparative effects and expense of dissemination strategies on utilization by decision-makers (practitioners, policy-makers).

Dissemination strategies that foster utilization require strategic alliances and networking among organizations at the municipal, provincial, and national levels.

> *Pooled resources*
> *makes everyone richer,*
> *pooled information*
> *makes everyone wiser,*
> *nothing is lost in the dispersal.*

> – Ferguson (1980), p. 332

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Commentary – Summary

Dissemination:
Current Conversations and Practices

Sandra C. Tenove

The dissemination of research in a manner that leads to its effective implementation is a topic of concern across disciplines and practices. As the demands on scarce health-care resources increase, a shift to evidence-based decision-making and practice is required. Despite attention to the need for effective and efficient communication among researchers, practitioners, and policy-makers, a gap exists between research evidence for practice and actual practice. Yet, although dissemination is widely acknowledged to be a pivotal concept linking research and practice, discussions on this topic often devolve into opposing themes (science versus practice, researcher versus practitioner, creation versus application) that can hinder genuine communication and mask important issues that require collaboration.

The realization that progress still has to be made if truly intersectoral, collaborative, comprehensive dissemination is to be achieved was the foundation for the workshop Conversations in Dissemination, hosted by the Alberta Consortium for Health Promotion on May 5, 1999. The workshop focused on how researchers, practitioners, policy-makers, and others can help one another to access, interpret, apply, and participate in a more broadly conceived dissemination process. Through staged conversations — co-facilitated by researchers and practitioners — participants from academia, practice, and intermediary groupings were helped to define their multiple roles in the creation and application of knowledge and to identify specific dissemination strategies. Keynote speaker Dr. Penelope Hawe suggested that relationships — as well as having supportive and rational organizational climates — are crucial to successful dissemination, that knowledge is developed on both sides of the practitioner/researcher divide, and that researchers

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and academics ignore this to their peril. She further identified issues around relationships, capacity-building, intersectoral collaboration, and premature dissemination, which locate these efforts in the context of modern-day health care. So what do we know about dissemination?

Beginning with a Unidirectional Approach

Initial efforts in dissemination reflected a rather paternalistic, unidirectional, often top-down approach to the distribution of knowledge. Researchers were charged with the task of both creating knowledge and getting their research information out to practitioners and the public. Rogers (1983) introduced diffusion theory as a means of conceptualizing this knowledge transfer, outlining a pattern in the adoption of new ideas and elements believed to affect successful diffusion including the nature of the innovation, channels of communication, time-frame for the process of adopting the innovation, and the social system in which the innovation is placed (Johnson, Green, Frankish, MacLean, & Stachenko, 1996). A growth curve was used to portray the initial slow spread of the innovation, through the acceleration of acceptance and utilization, to the final slowing down of responses to innovative practice.

Further studies resulted in the identification of innovators (placed at the beginning of the growth curve during the initial, slow phase), early adopters and early majority (evident in the acceleration phase of innovation uptake), and middle majority and late adopters (evident in the final, decelerated phase of uptake). Each of these categories provided researchers with information on the manner in which individuals become aware of new knowledge and the interventions that might be used to encourage ready adoption of the innovation being presented. Although this provided researchers with insight into the characteristics of users (usually practitioners), dissemination was still viewed as a problem — primarily a one-way process, and often an unsuccessful one.

Subsequent efforts to improve dissemination culminated in lists of barriers to meaningful communication (Funk, Tornquist, & Champagne, 1995), attention to the process of communication, and the development of technology to ensure that such communication was effective (Lomas, 1997). Change theories were revisited as a way of further examining knowledge uptake. When it became clear that understanding the users of knowledge was insufficient to guarantee successful transfer, researchers focused their attention on the context for knowl-

edge dissemination — the organizations in which practitioners and policy-makers worked.

A Systems Approach Leads to New Linkages

Orlandi (1996) recognized that a major bottleneck in the flow of knowledge was caused by the organizational and professional screen through which information must pass. He proposed systems theory to link the development and delivery processes in the creation and application of knowledge, including problem identification, adoption, utilization, evaluation, revision, and testing. Whereas the dissemination process was initially seen as an endpoint to the research process, a system was now envisaged that would identify different players, different activities, and different processes at work in innovation transfer. New communications strategies would provide rapid access to research results; connections could be forged between researchers and the practitioners and decision-makers who might use their information; feedback loops could be established to provide researchers with useful information on the practicality of the knowledge and/or innovations being offered; and new questions could be generated. The challenge became one of harnessing technology to meet the researcher's dissemination requirements (Johnson et al., 1996). The initial, positive response to these initiatives resulted in the development of organizational research structures and teams; intermediaries to process information from researchers into acceptable formats for practitioner uptake; and the use of strategic and operational linkages among researchers, practitioners, consumers, industry, policy-makers, and communities (Lomas, 1997). Interactive processes whereby practitioners and consumers could participate actively in producing, seeking, and utilizing knowledge formed the basis of a new social order (Green & Johnson, 1996; King, Hawe, & Wise, 1998).

Two-Way Communication

Successful dissemination requires a complex system of two-way linkages among researchers, practitioners, and their organizations (King et al., 1998). We now recognize the importance of involving those who are affected (practitioners, decision-makers, and, yes, consumers) by the outcome of research from the beginning, ensuring a sharing of decision-making power, commitment to the process, and ownership of the outcomes (Green & Johnson, 1996; King et al.). With this recognition comes the realization that the field must be developed to enable these parties to become active searchers and users of knowledge. The only way to

ensure evidence-based practice is to bring those involved to a common table for discussion and collaboration. This requires that communication be still further improved among researchers, practitioners, policy-makers, and consumers: "conversations in dissemination" must take place; bridges must be built among policy-makers, practitioners, communities, and resources (Green & Johnson; King et al.).

Taking the Next Step

The Alberta workshop endeavoured to begin these "conversations." This information and the realizations that flow from it were presented at the Alberta Public Health Association Conference on May 6, 1999, the day after the workshop was held. Written summaries are being provided to participants, and information is being posted on internet listservs and published in newsletters and academic journals. Further, the findings are being communicated broadly to those in a position to change dissemination practices, be they practitioners, researchers, administrators, or information brokers or other consumers interested in changing practice to achieve better health outcomes. Additionally, ways to keep the conversations going are being generated and supported. Dissemination is more than a two-way process: it is intersectoral, interdisciplinary, and interlinking; it requires capacity and commitment. This is a new beginning.

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Acknowledgement

Exploring the Experience of Type 2 Diabetes in Urban Aboriginal People

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L'expérience du diabète chez les autochtones (inscrits et non inscrits) vivant en milieu urbain a été explorée dans le cadre d'une étude qualitative. Puisque les chercheurs se sont penchés presque exclusivement sur les autochtones vivant dans des réserves et des communautés rurales isolées du Canada, des entrevues ont été menées auprès de participants (n = 20) résidant dans la ville de Winnipeg, au Manitoba. Des données obtenues, trois thèmes ont été retenus : le diabète en tant que maladie omniprésente et incontrôlable; au-delà d'un taux élevé de sucre — la manifestation du diabète à travers les changements dans le corps; et le bon, le mauvais et le non efficace – les interactions avec les pourvoyeurs de soins. Les résultats de cette recherche et de recherches antérieures appuient l'existence d'un modèle de diabète pan-autochtone. Cet état de fait contemporain et culturel semble transcender la géographie et comporte des implications quant aux approches de prévention et de traitement utilisées dans les programmes et les services de santé desservant les autochtones atteints de diabète.

The experience of diabetes among urban Aboriginal people (status and non-status Indians) was explored through a qualitative study. Because researchers have focused almost exclusively on Aboriginal people living on reserves or in isolated rural communities in Canada, this study conducted face-to-face interviews with participants (*n* = 20) living in the city of Winnipeg, Manitoba. The data generated 3 themes: diabetes as an omnipresent and uncontrollable disease; beyond high sugar: diabetes revealed in bodily damage; and the good, the bad, and the unhelpful: interactions with health-care providers. Findings from this study and previous research support the existence of a pan-

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Aboriginal model of diabetes. This contemporary cultural stance appears to transcend geography and has implications for the prevention and treatment approaches used in programs and health services for Aboriginal people living with diabetes.

One of the major health problems among the Aboriginal people of Canada (status and non-status Indians, Métis, and Inuit) is non-insulin-dependent diabetes mellitus, or type 2 diabetes (Hanley et al., 1995). Compared to the general Canadian population, disproportionate numbers of Aboriginal people are diagnosed with diabetes as well as its preventable late complications (Anderson & Dean, 1990).

An interplay of genetics and sociocultural determinants is thought to contribute to the prevalence of diabetes among Aboriginal people (Daniel & Gamble, 1995; Eaton, 1977; Jackson & Broussard, 1987; Neel, 1962; Young, Szathmáry, Evers, & Wheatley, 1990). Aboriginal people have experienced significant social and cultural changes since the arrival of the Europeans. Their spiritual beliefs, culture, food sources, and environments changed radically in a relatively short period of time. Now, many Aboriginal communities are characterized by poverty, unemployment, and other socio-economic conditions unconducive to health and well-being (Gregory, Russell, Hurd, Tyance, & Sloan, 1992) and Aboriginal people are susceptible to chronic diseases such as obesity, cardiovascular disease, hypertension, and diabetes.

Researchers have focused on the experience of diabetes among Aboriginal people living on reserves or in isolated communities (Garro, 1994a, 1994b; Hanley et al., 1995; Lang, 1985; Parker, 1994). Exploration of the health concerns of urban Aboriginal people in Canada is a recent phenomenon (Marshall, Johnson, & Martin, 1992; Shestowsky, 1995) and only a few researchers have reported the experiences of these people living with diabetes (Hagey, 1984; Travers, 1995). This knowledge deficit is remarkable given that almost three quarters of all Aboriginal people in Canada live "off reserve" (Shestowsky).

The purpose of this study was to determine the experience of Aboriginal people living with type 2 diabetes in the city of Winnipeg, Manitoba. Interviews with participants were organized around the central research question *What is the general experience of Aboriginal people living with diabetes in an urban setting?*

Research Design, Method, and Data Analysis

Given the paucity of knowledge about the experience of diabetes among urban Aboriginal people, a naturalistic approach (Lincoln &

Guba, 1985) was appropriate to explore this phenomenon. Specifically, the method applied was person-centred interviewing (Levy & Hollan, 1998).

After approval had been received from an ethical review committee, data were collected over a period of 10 months. Participants (*n* = 20) recruited from urban diabetes resource clinics were interviewed in English by a research assistant who was an Aboriginal. The lead author held a series of workshops with the research assistant on the fundamentals of interviewing and generation of qualitative data, such as the practicalities and conceptual issues associated with interviewing, tape recording, and the use of self as instrument.

Participants declared themselves to be urban Aboriginals. Although all Aboriginal people (Indian, Métis, Inuit) were eligible, the participants were exclusively status and non-status Indians, primarily Cree. Face-to-face interviewing was guided by a semi-structured interview schedule based on the literature as well as the researchers' experiences with chronic illness and with this population. The duration of the interviews ranged from 30 to 90 minutes, averaging 1 hour. The questions included: *What is hard or difficult about living with diabetes?* and *What is your understanding of diabetes?* The interviews took place in participants' homes and were audiotaped. The audiotapes were transcribed verbatim using WordPerfect software. The research team conducted ongoing evaluation of the data set for saturation and observed repetition of patterns (i.e., saturation) upon completion of the 20th interview.

The transcripts underwent standard content analysis as recommended by Burnard (1991). Team members reviewed the transcripts as they were generated to ensure quality and completeness of the database. Patterns and unique textual data (events, experiences, or reported behaviours) were coded, aggregated into categories, and abstracted into themes. Each interview was coded separately by three of the investigators, who then met as a group to discuss the clustering of the data into categories and themes. The process entailed establishing consensus and truth value within the research team as to the interpretation of the data (Munhall, 1994). Although member checks were not conducted, trustworthiness was enhanced by the presence of the research assistant, who participated in the ongoing data analysis, offering feedback based on her professional and personal experiences with diabetes as a health-care provider and as a member of the Aboriginal community.

Results

The majority of the 20 participants were women (60%, $n = 12$) averaging 53 years of age (*range* = 28–68); most of the women ($n = 5$) were in their sixth decade of life. The men averaged 50 years of age (*range* = 43–60). The participants had lived in Winnipeg from 0.8 to 62 years, for a mean of 23 years. One participant had lived in Winnipeg less than 1 year; the others had lived in Winnipeg a minimum of 7 years. Participants had relocated from northern and other rural reserves throughout Manitoba. Additional demographic data are presented in Table 1.

Table 1 *Selected Demographics*

	n	%	$\bar{x}$	*range*
Residence ownership/ rental status				
Own	1	5		
Rent	19	95		
Employment status				
Employed	3	15		
Unemployed	17	85		
Education level			Grade 8	Grade 2 to university courses
Time since diabetes diagnosis			10.4	<1 year to 32 years
Diabetes treatment regimen (All had some component of diet and exercise.)				
Primarily oral agents	13	65		
Primarily insulin	7	35		

Three theme clusters (see Figure 1) generated from the data provide a preliminary understanding of the experience of urban Aboriginal people living with diabetes. Data excerpts are representative of the 20 participants.

Figure 1 *The Experience of Type 2 Diabetes among Urban Aboriginal People*

1. Diabetes as an Omnipresent and Uncontrollable Disease
2. Beyond High Sugar: Diabetes Revealed in Bodily Damage
3. The Good, the Bad, and the Unhelpful: Interaction with Health-Care Providers

Diabetes as an Omnipresent and Uncontrollable Disease

Diabetes was "all around" the participants. Every person (*n* = 20) identified immediate family members diagnosed with and treated for diabetes. Extended family members — grandparents, aunts, uncles, nephews, and cousins — were also living with diabetes.

> *My grandfather from my mother's side — he was a diabetic. My husband's mother was a diabetic. My sister and my brother. My dad also had diabetes, but he died. My other sister is a borderline diabetic.*

> *Diabetes has been around my life since I was born. My grandparents had it. My niece has it. My husband has it. I have it. My sisters are borderline. So diabetes is all around me.*

Each participant, prior to being diagnosed, felt at risk for diabetes. Collectively they indicated that their young children were the only family members not afflicted with the disease, and they acknowledged the fact that the children could develop it over time.

Participants were fearful of diabetes because they had witnessed the plight of family members and friends subjected to its ravages. The signature of diabetes on their bodies included amputated feet, legs, and hands. Many participants knew Aboriginal people whose kidneys had failed because of diabetes, requiring them to undergo renal dialysis.

> *I fear sometimes...what happens if it [blood sugar] really goes up and they [the physicians] can't control it? Especially when the doctor told me that any little cut I have I should take care of it — that's scary. Like, I've seen friends lose their legs...cut their legs off because of diabetes and they end up with an artificial leg.*

> *The people I see... how they are when they have diabetes. Some of them are really bad. Like, our friend, he died, not even a year ago, eh. They cut off both legs. They cut off his fingers. He was really in bad shape. He only lasted two years. Diabetes scares me. It scares me because I could lose my feet, eh. Lose my hands and lose my sight.*

Participants who had witnessed the suffering of others expressed the view that diabetes would progress and run its "natural" course, despite the efforts of health-care providers and the persons themselves. They spoke of the inevitability of amputations, vision loss, renal failure, and eventual death. Most participants normalized the catastrophic events associated with advanced neuropathy, seeing them as part of the natural history of diabetes. They saw themselves as caught up in a disease that, on a personal and collective level, defied control.

> *Well, they [people with diabetes] have to go on a diet. They have to take needles. They have to go on dialysis. They have to lose their toes, their feet — the people I know anyway, and they're my family I'm talking about.*

My attitude is because there is no cure for it, sure we can control it, but the way I look at it, what's the use? Why go to a doctor, why follow a diet...sooner or later you are going to die from this disease anyway. You are going to lose a leg, you are going to lose a hand, you're going to go blind. That's my attitude, eh.

There is nothing you can do about it. You wish to hell it had never come around — stayed where it was before it found you, eh. There's nothing you can do about it. There's no cure for it.

Participants interacted with and cared for family members and friends whose diabetes had progressed to the extent that serious complications were grossly evident. In struggling with the disease, each participant was confronted with a traumatic family legacy, fears caused by witnessing the suffering of others, and acceptance that diabetes would lead to death. In the face of overwhelming subjective experience confirming that diabetes was essentially an uncontrollable disease, they felt they were being held personally accountable by health-care providers for its control. This placed many of them in a classic "double bind": encouraged to assume personal responsibility for a disease that, based on their experiences, did not respond well to professional treatment. Many of the participants blamed themselves for their symptoms and complications, vowing to "try harder" to control their diabetes. They experienced tension in reconciling self-blame with a disease that resisted control.

The doctor said there is no way to control it. It's only me that has to do it.

My leg was sore and that's when the doctor said that it is only me that can control it. There is nobody else. There's no cure for diabetes — it's you. If you follow your diet and your exercise and go for walks and stay away from fried foods.

That's what's wrong with me. It's my fault. I didn't make too much changes. This is why my sugar diabetes is so bad. That's my fault. I'm going to try very hard in the new year. I'm going to try very hard. I'm going to try very hard, so help me God. I will, you know, try harder.

Participants said they followed a "special" diet for their diabetes. Those who had been diagnosed many years earlier indicated that they were still "on a diabetic diet." Before being diagnosed, participants had usually fried their food. Frying was an established method of food preparation from early in their lives, a deeply ingrained life-pattern.

When I was growing up, we used to have fried fish or fried baloney. I don't like boiled stuff, but I got no choice.

I was always used to eating a lot of sweets and deep-fried foods. I'm still working on the diet. It's hard to change a life. I've been doing it [eating

fried foods and sweets] for 50 years and now I have to change in three or four months?

They identified suddenly being instructed to stop eating fried foods and sweets as one of the most difficult aspects of living with diabetes.

Two of the participants reported that they modified their cooking habits to benefit their children and other family members. Concerned that their children might develop diabetes, they tried to promote better eating habits within the family.

I'm worried about my kids. I want them to change their eating patterns so they can eat the same kind of foods I'm eating — so we can help each other instead of eating all this food we should not be eating — pastry stuff. Now all of us, we changed our eating pattern at home and it helps. They help me along with it too — they eat what I eat and we don't bring in anything that we shouldn't.

In contrast, the remaining participants prepared "diabetic diet foods" for themselves or their partner while their children continued to have other meals with fried foods and sweets.

My wife has to cook different for me than she does for the rest of the family. Like they can have mashed potatoes. I can't.

This practice reinforced the idea that family members living with diabetes were placed on a "special diet" that concerned only them. Other family members ate meals that had been the standard cuisine prior to the diabetes diagnosis.

Beyond High Sugar: Diabetes Revealed in Bodily Damage

When participants were asked, "What causes diabetes?" more than half (55%, $n = 11$) replied, "I don't know." Despite prompting by the interviewer, they were unable to identify the cause. The remaining participants attributed diabetes to various sources: consuming excessive amounts of alcohol, genetics, eating too many sweets, obesity, dietary change from traditional to processed foods, and the arrival of the "White man's" disease (diabetes).

When asked whether they knew what diabetes was, six participants said "yes" and proceeded to describe the disease, speaking of "high blood sugar" and the need to keep their blood sugars under control; they mostly accounted for their diabetes through the lens of the biomedical model. The remaining participants ($n = 14$) were unable to provide an overview or description of diabetes in their own words.

Notably, the majority of participants who had been diagnosed many years earlier were unable to articulate the cause of their disease.

> *No. I don't know anything about it. All I know is I have diabetes.* [diagnosed 20 years previously]

> *All I know is that it is diabetes and that's it. I don't know too much about it. It just gets you sick.* [diagnosed 25 years previously]

However, these participants *were* able to articulate the consequences of diabetes and the trauma it caused.

Most participants came to know about their own diabetes through the progress of physical symptoms. Diabetes was revealed in bodily destruction, and "knowing about diabetes" was rooted in their corporeal experiences. It was at the point of serious bodily damage that many participants began to recognize their peril, coming to realize the destructive power of diabetes and its impact in the context of their own bodies. Frequently, participants did not follow their diets or exercise regimens until they noticed significant bodily changes. Diabetes did not appear to become real for them until their bodies were grossly affected.

> *When I was first diagnosed, I didn't do anything. I kept on for a few years the way I was living. Kept drinking until it started getting too bad and I had to start taking treatments.* [diagnosed 10 years previously]

The Good, the Bad, and the Unhelpful: Interactions With Health-Care Providers

Two participants had experienced positive interactions with health-care providers, commenting on the supportive manner in which they had been treated. These health-care providers did not issue ultimatums or make rules. Rather, they gave advice and information and permitted the person with diabetes to accept or reject what was being offered. A dietitian who the took time to "explain everything" and encouraged the participant to help herself was perceived as supportive.

> *I was 249 pounds. But the dietitian didn't tell me to lose weight, but she told me the fact that being overweight has a lot to do with what happened to me — and probably what kind of foods I ate. She told me I'd feel a lot better if I lose weight, but she didn't say, "Lose weight!" That's up to you — she said — whatever I want to do. So I thought, I'll do it.*

Living with diabetes meant trying to follow a set of rules and regulations prescribed by health-care practitioners. Participants were told "what to do" and "what not to do." Interactions with health-care practitioners usually resulted in reinforcement of rules concerning diet,

blood sugar levels, medications, and exercise. When they did not follow rules they were sometimes berated and subjected to threats.

> They told me that the only way I could prevent these symptoms from happening is by doing what my doctor told me to do — like my diet and physical activities. I forgot to take my pills and the doctor said that was not nice. He said, "You've got to try and take them every day." And then my blood sugar shot up and then that's when he told me if I didn't lose weight that I would have to take needles [insulin]. And then I got mad and didn't bother taking needles.

> The doctor I went to see, he said, "If you do what I tell you to do — you will be OK." The doctor — he's sort of mad I wasn't following my diet.

> The doctor scared me. He said that I could die, you know, if I don't listen. He scared me. He really scared me.

Participants reported feeling rushed during visits to their physician and the diabetes clinic. Little time was available for explanation and one-on-one instruction, and participants said that limited teaching and learning occurred during the visits. The focus of physician encounters was most often reported as a review of blood sugars and assessment of medications.

> The nurse talks to me about my diet. You see — the doctor I went to — he never took time to talk to me at all. He was always in a rush.

> There are a lot of people they have to look after. They only have time to see you for a short time because there are so many people with diabetes. You have to be patient. This is why it's so hard to try and get the answers you want, because it has to take patience. I know a lot of people — sometimes they feel like nobody wants to listen. If we had a lot more time, you could talk about diabetes.

More than half the participants ($n = 11$) reported that they had been given pamphlets on diabetes. Two said they found these helpful, but the majority identified problems with information presented in this manner.

> I got all the pamphlets and I tried to read them and I can't. It is hard to understand them, eh. It's a hard thing. I can't bring myself to learn about diabetes myself. I have to have some help, somebody to talk with about it.

> She gives me little pamphlets. I said, "Thank you," and I put it somewhere on top of the fridge and that's where they stay, really.

For the majority of the participants, reading was not the preferred method of learning about diabetes. Interacting directly with health-care providers was seen as more effective. Moreover, learning from other Aboriginal people living with diabetes was identified as a helpful and welcome strategy.

I like the people coming and talking to me about diabetes. They have diabetes. I can't read the pamphlets and I never bothered anyway.

There are a lot of things I wish I could share with somebody. Somebody I could talk to about diabetes — that would help. It would help a lot of people if somebody talked to them.

Two participants voiced the need for Aboriginal educators. One participant suggested that a diabetes clinic administered and managed by Aboriginal people would help address deficiencies in the health-care system.

I would like to see our own native women and young men become nurses...with some experienced teachers guiding us along. Like our own people, like you [Native research assistant] would go out and do the teaching.

I think we should have our own diabetes clinic, and I mean our own. Aboriginal people, eh, our own nurse, our own doctor, you know. Our own diabetes clinic run by Native people. Native doctors, Native nurses — like they should do the teaching to me about diabetes...what it does to my body, eh. How can I take care of myself, eh? What this disease is. The White doctors and nurses, they say, "This is what you have. This is what you take. This is what you do. You're not supposed to eat this," and then you go. I would rather have our own and have these people spend time with me and explain diabetes to me — the information I never had when I was first diagnosed.

The use of "Indian medicine" (as the participants called it) and other traditional approaches to healing were explored. Of the 20 people interviewed, four reported using Indian medicine. One of the four people used traditional medicine for "colds" but not for treating his diabetes. Beyond the use of medicines, participants said they looked to Elders for understanding and advice about living with diabetes.

Yes I do. Whatever I get from my Elders — they are teaching me — I use it, plus the medication that the doctors give me.

Participants indicated that accessing traditional medicine in the urban setting was difficult. A few participants suggested that they would use these medicines if they were more readily available.

There is Indian medicine, but when you live in the city it is difficult to get. It helps a lot of people. It is helping them on the reserves.

Discussion

This study has afforded an exploration of type 2 diabetes among urban Aboriginal people (status and non-status Indians). Three main findings

warrant discussion: a cultural model of diabetes, the absence of integrated culturally appropriate services in the urban context, and implications for programming and delivery of services to Aboriginal people.

Pan-Aboriginal Cultural Model of Diabetes

To date, studies have focused almost exclusively on the experience of diabetes among people living on Indian reserves in Canada (Garro, 1994a, 1994b; Hanley et al., 1995). It should be noted that the cultural model as described in these studies held true for the urban participants in the present study. There appears to be a shared set of understandings, or a cultural model, of diabetes, whether rural (Garro, 1994a, 1994b; Parker, 1994) or urban. However, participants in the present study were primarily unemployed and on average had a Grade 8 education. The impact of poverty combined with cultural dimensions must be considered in the context of the model. Keeping this caveat in mind, the pan-Aboriginal model is characterized by the inevitability of developing diabetes, the virulent progression of a disease that defies personal and professional control, and the fear of what diabetes does to one's body and one's life (Garro, 1994a, 1994b). Participants constructed this model as a result of their own experiences with diabetes as well as the suffering of family members and others in the Aboriginal community.

The findings of this modest study lend support to a pan-Aboriginal cultural model of diabetes that transcends geography. As Garro (1994b) observes, "this cultural model provides a framework for interpreting perceived symptoms, making causal attributions, comprehending new information, and taking action in response to illness" (p. 184). Thus there are implications for the entire approach to this disease, including primary and secondary prevention (Daniel & Gamble, 1995) and disease management (Hagey, 1984; Hagey & Buller, 1983). The conceptualization of diabetes within the pan-Aboriginal cultural model is vastly different from that within allopathic and non-Aboriginal explanatory models. For example, the cultural model suggests that disease management is beyond the individual's control — diabetes defies control and is part of a complex set of personal, social, cultural, and historical interactions. Allopathic and non-Aboriginal models, in contrast, focus on individual, personal control and responsibility for the disease (Garro, 1994a; Paterson, Thorne, & Dewis, 1998). Not unexpectedly, therefore, Aboriginal persons, operating from within the latitudes of this cultural model, may be perceived by health-care providers as abdicating responsibility for their disease. In reality, such behaviours by Aboriginal people are in accord with their understanding of diabetes.

The fact that current preventive interventions are not "working" for Aboriginal people may also be partly explained through this cultural model. The findings challenge researchers to disentangle the interaction of poverty on this pan-Aboriginal model of diabetes.

Diabetes Care in the Urban Context

The urban setting offers an infrastructure for diabetes care. There are numerous specialists (e.g., endocrinologists, nurse clinicians, diabetes educators, dietitians) as well as organizations (e.g., the Canadian Diabetes Association) committed to addressing diabetes. The participants in this study either did not access this abundance of resources or reported them as unhelpful. Almost all participants described distressing confrontations with health-care providers, commented that information about their diabetes was rule-bound, and indicated that many of the diabetes educational pamphlets were unhelpful. These findings are surprising in light of Hagey's (1984) classic work with the Anishnawbe Health Toronto community health centre, which demonstrated the importance of culturally relevant approaches to diabetes care. Daniel and Gamble (1995) stress the need for such approaches to diabetes care and identify Canada's lack of "development, implementation, and evaluation of an integrated primary and secondary diabetes prevention program" (p. 254). There remains the need to move beyond "diabetes rhetoric" in the urban context. The findings of the present study reinforce the necessity of culturally competent and integrated approaches that consider individual and community perspectives in the prevention and treatment of diabetes among Aboriginal people.

Implications for Programming and Delivery of Services

The Royal Commission on Aboriginal Peoples (Canada, 1996) recommended that less emphasis be placed on diabetes as a disease entity and that more emphasis be placed on the social, economic, and political factors that influence health. To this end, there is an urgent need for the health-care sector to work in partnership with Aboriginal leaders, agencies, and those living with diabetes. Programming and services must take into account the historical, social, and cultural factors surrounding diabetes. This requires a focus on individuals and their life circumstances in the context of the urban Aboriginal community.

In addition to this macro focus, there is a pressing need for disease specifics to be addressed in a culturally relevant and meaningful manner. The whole approach to diabetes care and education requires

re-examination in light of the emerging pan-Aboriginal cultural model of diabetes and the macro context in which diabetes is experienced (Daniel & Gamble, 1995; Hagey, 1984). Particularly disconcerting to participants in this study were their interactions with health-care providers around issues of diet and food preparation and the focus on rules for managing their diabetes. Although there have been some individual attempts to address these issues (e.g., modest cultural modifications of diabetic teaching aids), there does not appear to be systematic integration of service provision at the micro level for urban Aboriginal people.

A few of the participants identified a need for community-based programming initiated and run by Aboriginal people. They indicated a desire to speak with other Aboriginal people with diabetes and to try traditional approaches to healing. Other researchers (Daniel & Gamble, 1995; Hagey & Buller, 1983; Shestowsky, 1995) have noted the importance of such programming but point out that one of the issues facing urban Aboriginal people is limited access to traditional healing services (Shestowsky). It is clear that meaningful and culturally relevant translation of diabetes-related disease concepts and facilitation of the "uptake" and application of diabetes knowledge requires that Aboriginal people and health-care providers work in partnership.

Aboriginal Health Services (AHS) at the Health Sciences Centre (HSC) invited the research team to present the findings of this study to the health-care community. As a result of the presentation, and in keeping with a commitment to the empowerment of Aboriginal people, the research team is working with AHS and the HSC to bring together communities concerned about diabetes: providers of health and social care; community- and hospital-based agencies (Aboriginal Wellness Centre, Winnipeg Hospital Authority); Diabetes Education Resource; Elders and spiritual leaders; support groups for Aboriginal people living with diabetes; and representatives of urban-based Aboriginal political organizations.

In conclusion, the pan-Aboriginal model of diabetes differs from that of health-care providers and non-Aboriginal society. For Aboriginal people with diabetes, application of understandings generated outside their culture may be at best ineffective and at worst damaging. The pan-Aboriginal model challenges existing approaches to diabetes prevention and treatment. Taking action and moving beyond rhetoric, to design culturally relevant, integrated approaches to the prevention and treatment of diabetes in Aboriginal people, entails partnerships between health-care providers and the Aboriginal community.

Additional research is required to define culturally competent care from the Aboriginal perspective. Successful outcomes related to diabetes care are also predicated upon concomitant efforts at the macro and micro levels.

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Evaluation of Three Brands of Tympanic Thermometer

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Nombreux sont les avantages documentés que présentent les thermomètres auriculaires à infra-rouge (TAI), dont la vitesse, la maniabilité et le peu de désagréments qu'ils occasionnent pour le patient; ceci tend à encourager leur utilisation au service des urgences et aux soins intensifs. Cependant, certains doutes ont été soulevés quant à la précision des relevés de températures du TAI. La présente étude a été menée dans le but d'évaluer la précision de trois marques de TAI, en les comparant aux thermomètres servant à mesurer la température rectale et la température de l'artère pulmonaire et ce, en milieu de service d'urgence de même qu'aux soins intensifs. Les résultats indiquent que les trois TAI affichent des degrés d'exactitude adéquats en ce qui concerne respectivement le service des urgences (amplitude=0,9242 à 1,0000) et les soins intensifs (amplitude=0,9737 à 1,0000), mais des degrés de sensibilité inacceptables dans le premier cas (amplitude =0,5455 à 0,8000) et le deuxième (amplitude=0,0000). De nouvelles analyses ont présenté des variations élevées de température entre les différents relevés des TAI. À l'urgence, les températures TAI étaient en moyenne 0,3684 °C inférieures à la température relevée sur le thermomètre rectal et on pouvait s'attendre à ce qu'elles varient de plus de 2 °C de celle-ci. Aux soins intensifs, la température moyenne relevée était semblable à la température de l'artère pulmomaire mesurée (inférieure par 0,0259 °C), mais pouvait une fois de plus varier de plus de 2 °C. Des recommandations portant sur la pratique infirmière et l'éducation font l'objet d'une discussion.

Infrared tympanic thermometers (ITT) have many documented benefits, including speed, ease of use, and noninvasiveness, to support their use in emergency departments (ED) and intensive care units (ICU). However, concerns have been raised about the accuracy of temperatures reported by ITT. This study was conducted to evaluate the accuracy of 3 brands of ITT, compared to rectal and pulmonary artery thermometers, in ED and ICU

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settings. Results indicated adequate specificity for all 3 ITT in ED (*range* = 0.9242 to 1.0000) and ICU (range = 0.9737 to 1.0000), but unacceptable sensitivity in ED (*range* = 0.5455 to 0.8000) and ICU (*range* = 0.0000). Further analyses indicated highly variable ITT-reported temperatures. In ED, ITT temperatures were, on average, 0.3684°C lower, and could be expected to vary by more than 2°C from the actual temperature as reported by rectal thermometer. In ICU, the average reported temperature was similar to the actual pulmonary artery temperature (0.0259°C lower), but again could vary by more than 2°C. Recommendations for nursing and education are discussed.

Literature Review

Speed, ease of use, and noninvasiveness are documented benefits of the infrared tympanic thermometer (ITT) (Alexander & Kelly, 1991a, 1991b; Erickson & Meyer, 1994; Klein et al., 1993; Shinozaki, Deane, & Perkins, 1988; Yaron, Lowenstein, & Koziol-McLain, 1995). However, concerns have been raised about its accuracy (Chamberlain et al., 1995; Davis, 1993; Edge & Morgan, 1993; Erickson & Kirklin, 1993; Jakobsson, Nilsson, & Carlsson, 1992; Milewski, Ferguson, & Terndrup, 1991; Talo, Macknin, & VanderBrug-Medendorp, 1991; Zehner & Terndrup, 1991).

In previous studies, the ability to detect clinically significant fevers using the ITT was found to be a controversial issue (Brennan, Falk, Rothrock, & Kerr, 1995; Rhodes & Grandner, 1990). Factors contributing to conflicting results include size of auditory canal, especially with patients under 36 months of age (Klein et al., 1993), operator technique (e.g., ear tug, cleaning of probe tip) (Erickson & Meyer, 1994; Lattavo, Brit, & Dobal, 1995; Nobel, 1992; Terndrup & Rajk, 1992), environmental and ambient temperatures (Chamberlain et al., 1991; Doyle, Zehner, & Terndrup, 1992; Thomas, Savage, & Bregelmann, 1997; Zehner & Terndrup, 1991), model of thermometer (Erickson & Meyer; Klein et al.; Lattavo et al.), operating modes and mathematical corrective values used (Brennan et al.; Fraden & Lackey, 1991; Romano et al., 1993; Schmitz, Blair, Falk, & Levine, 1995), occlusion of ear canal with cerumen (Romano et al.; Yaron et al., 1995), and otitis media in children (Kelly & Alexander, 1991; Romano et al.).

We noted that there were incomplete data on: (a) the newer generations of ITT, (b) the need for repair and recalibration, and (c) ease of use (Nobel, 1992), and we therefore decided to address some of these issues within our clinical practice settings. The purpose of this study was to compare the three ITT models to determine their level of agreement with rectal or pulmonary artery (PA) temperature measurements.

Methods

A prospective study was undertaken with clients in the emergency department (ED) of the Pasqua Hospital and the intensive care units (ICU) of the Pasqua Hospital and the Plains Health Centre. Both institutions are within the Regina Health District in the province of Saskatchewan. The study took place over a period of 11 months.

Subjects

The subjects chosen had routine rectal (ED) or pulmonary artery (ICU) temperature assessment and were at least 3 months of age (Chamberlain et al., 1991; Davis, 1993; Stewart & Webster, 1992). Excluded were clients who had pre-existing rectal anomalies or surgeries that prevented rectal temperature assessment (Yaron et al., 1995), bilateral ear pain (Yaron et al.), or suspected cerebrospinal fluid draining from the ear, as were pediatric clients under the care of the Allan Blair Cancer Centre.

A total of 304 clients (46.7% female) treated in the ED had temperature recorded using rectal thermometer and ITT. A total of 108 clients (32.4% female) treated in ICU had temperature recorded using PA thermometer and ITT. ED clients ranged in age from 3 months to 87 years (*mean* = 3.8 years, *SD* = 11.995). ICU clients ranged in age from 40 years to 84 years (*mean* = 66.8 years, *SD* = 9.860).

Thermometers

Five types of thermometer were used. The RT and PAT thermometers were selected to be used as benchmarks in comparing the agreement and accuracy of the three ITT. The assertion of Romano et al. (1993) that "pulmonary artery blood temperature is traditionally accepted as the reference measurement of core body temperature" (p. 1181) is supported by other investigators (Ferrara-Love, 1997; Jakobsson et al., 1992; Neirman, 1991). Table 1 lists the brand, manufacturer, and number of measurements for ITT, rectal thermometer, and PA thermometer.

Each ITT model was submitted to Clinical Engineering for initial calibration. All models were found to be within 0.1°C of their respective set points, well within the specifications for these models. No repair or recalibration was required for any model during the data-collection periods. Twelve nurses were trained in the recommended procedure for obtaining ITT measurement, either by company representatives or by means of a video.

Table 1 *Methods and Instruments Used*

Method	ED n	ICU n	Instrument	Manufacturer	Collection Period
ITT	101	28	IVAC Core•Check (Model 2090)	IVAC Corp., San Diego, California	23/10/95 to 9/11/95
ITT	102	39	First Temp Genius (Model 3000A)	Intelligent Medical Systems, Carlsbad, California	30/11/95 to 13/01/96
ITT	101	41	Thermoscan Pro-1 Instant Thermometer (Model IR-1)	Thermoscan Inc., San Diego, California	30/04/96 to 29/06/96
Rectal	304	0	IVAC Temp*Plus II (Model 2080A)	IVAC Corp., San Diego, California	Above periods
PAT	0	108	Baxter Swan-Ganz® 7F Thermodilution Catheter (connected to Hewlett Packard Cardiac Output Model M1012A)	Baxter Health Care Corporation, Irvine, California	Above periods

Procedure

Oral consent was obtained from the client or family. Written consent was not required, as ITT is noninvasive and atraumatic and the sample had RT or PAT taken routinely. After a waiting time of 5 minutes in the ED, the RT was taken by lubricating the probe and placing it in the rectum until the completion tone was heard. PAT was sensed at the tip of the catheter, which sits in the pulmonary artery, and transmitted to a monitor. Each of the nurses obtained a tympanic temperature within 1 minute of obtaining RT or PAT. Where possible, nurses used their dominant hand to obtain the tympanic measurement from the ipsilateral ear of the client (e.g., right hand dominant: right ear of client), as recommended by Yaron et al. (1995).

Data collected for each client included age, sex, date, time of temperature assessment, whether right or left ear, temperature values obtained, diagnosis of client, any other relevant conditions (e.g., time of arrival in emergency), and the initials of the nurse data collector. In addition, a tympanic thermometer evaluation form was provided to all data collectors after each ITT model had been used. Completion of the form was voluntary and the information remained confidential.

Results

The data were analyzed using *SPSS* (Statistical Package for Social Sciences) for Windows. Descriptive temperature data are provided in Table 2.

Sensitivity and Specificity

The data from the three tympanic models were analyzed to determine their sensitivity *(Sens.)* and specificity *(Spec.)* in distinguishing fever and no-fever, as classified by rectal or PA thermometer. As stated by Tuokko and Hadjistavropoulos (1998), "the sensitivity of a test at any given cut-off score is the proportion of [fever positive] persons with scores above the test positive range. The specificity of a test score is the proportion of [fever negative] persons with scores falling in the test negative range" (pp. 25–26). Sensitivity and specificity analyses were not conducted for hypothermia, as too few cases of hypothermia presented in either ED ($n = 2$) or ICU ($n = 3$) to allow us to draw solid conclusions.

The ITT held very strong specificity, correctly identifying as fever-negative (temperature ≤38.5°C) clients who were fever-negative as determined by rectal thermometer. Specifically, IVAC perfectly identified all fever-negative clients as fever-negative (*Spec.* = 1.0000), while

Table 2 *ITT Mean Temperatures Compared to RT and PAT*

Unit/Method	Brand IVAC (n = 101)		Brand Genius (n = 102)		Brand Thermoscan (n = 101)		Aggregate (N = 304)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
ED/ITT	37.74	1.07	37.72	1.06	38.07	1.23	37.84	1.13
ED/RT	38.34	1.13	38.05	0.92	38.25	1.13	38.21	1.07
Mean Difference	0.6		0.33		0.18		0.37	
	Brand IVAC (n = 28)		Brand Genius (n = 39)		Brand Thermoscan (n = 41)		Aggregate (N = 108)	
ICU/ITT	37.05	0.82	36.96	0.96	37.23	0.97	37.09	0.93
ICU/PAT	37.09	0.74	37.07	0.83	37.16	0.71	37.11	0.75
Mean Difference	0.04		0.11		-0.07		0.02	

Genius (*Spec.* = 0.9870) and Thermoscan (*Spec.* = 0.9242) were nearly as accurate. The specificity of the ITT in determining fever was equally accurate with the PA thermometer. IVAC and Thermoscan perfectly identified all fever-negative clients as fever-negative (*Sens.* = 1.0000), while Genius was nearly as accurate (*Spec.* = 0.9737). In sensitivity, however, the ITT was less than ideal. Of the ED clients who were fever-positive (>38.5°C) as determined by RT thermometer, both Genius and Thermoscan identified 80% (*Sens.* = 0.8000), while the IVAC correctly identified only about 50% (*Sens.* = 0.5455). In the ICU, none of the ITT correctly identified a fever-positive client (*Sens.* = 0.0000), although by coincidence no clients presenting with fever (as determined by PAT) were tested with Thermoscan.

Agreement

The degree of agreement between temperatures reported by ITT and reported by rectal and PA thermometers was tested using the Bland and Altman technique (Bland & Altman, 1986; Szaflarski & Slaughter, 1996; Yaron et al., 1995). This technique overcomes the methodological problems associated with using correlation analyses for determining agreement between clinical measures of the same parameter (Nield & Gocka, 1993; Szaflarski & Slaughter).

The ED data, using RT as the comparison measure, indicated that on average the ITT-reported temperatures were 0.3684°C lower than those reported by rectal thermometer (see Figure 1). Furthermore, calculating 95% confidence intervals (95% CI) showed that ITT-reported temperatures could be expected to range from over-reporting (i.e., ITT higher than RT) by 0.6796°C (lower level of agreement) to under-reporting (i.e., ITT lower than RT) by 1.4164°C (upper level of agreement).

The ICU data, using PAT as the comparison measure, showed a more accurate average (see Figure 2), under-reporting by 0.0259°C. Calculation of 95% CI, however, revealed an expected range from 1.0623°C over-reported (lower level of agreement) to 1.1141°C under-reported (upper level of agreement).

Differences

Differences in individual temperatures were also examined for patterns. Difference tables were generated to determine the level of agreement among assessment instruments.

The IVAC temperature was lower than the RT in 85% of clients, and the difference was more than 0.5°C in 58% of clients. The Genius tem-

Figure 1 *Scatterplot of Difference between ITT and Rectal Temperatures (in ED)*
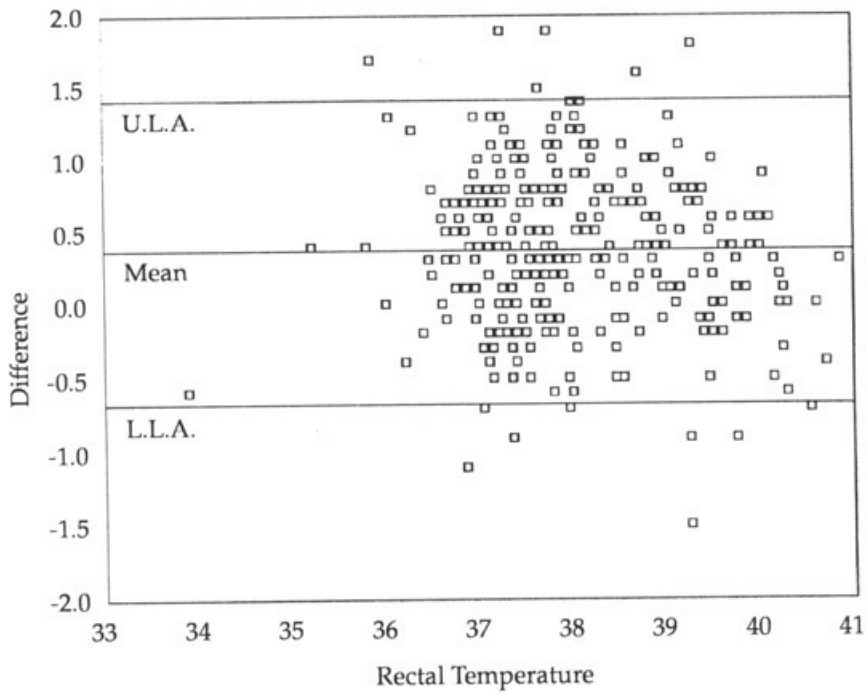
Figure 2 *Scatterplot of Difference between ITT and PA Temperatures (in ICU)*
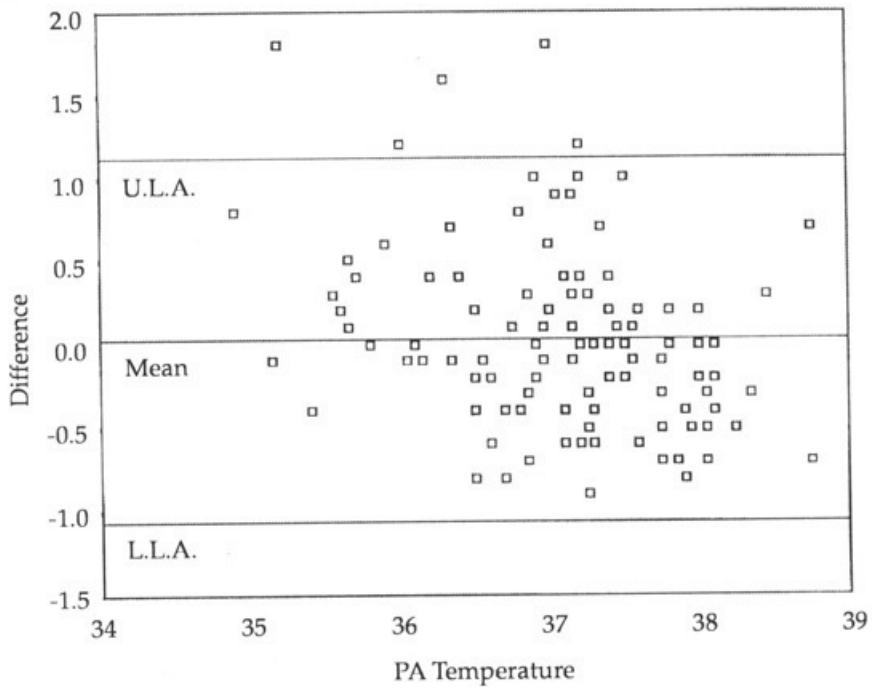
perature was lower than the RT in 64% of clients, and the difference was more than 0.5°C in 34% of clients. The Thermoscan temperature was lower than the RT in 66% of clients, but the under-reporting was more than 0.5°C in only 26% of clients.

The IVAC temperature was lower than the PAT in 53% of clients, and the difference was more than 0.5°C in 11% of clients. Genius, while having the most temperatures exactly equal to the PAT (10%), also reported a lower temperature than the PAT in 47% of clients, by more than 0.5°C in 26% of clients. On the other hand, Thermoscan, also with temperatures exactly equal to the PAT in 10% of clients, recorded temperatures higher than the PAT in 63% of clients, although higher by more than 0.5°C in only 12% of clients. Thermoscan recorded temperatures lower than the PAT in 27% of clients.

In Table 3, the difference data are further broken down by age for the rectal group. On the whole, Thermoscan reported the closest temperature to the RT in all age groups.

User Evaluation

The comments related to each brand of ITT with respect to ease of use, accuracy, speed of temperature determination, probe covers, cleaning, sturdiness, battery performance, maintenance, and recommendations revealed that overall the Genius and Thermoscan models had very positive evaluations. They were found to be lightweight, quick, easy to use, easy to clean, and easy to maintain. Overall approval for both units was very high, and some data collectors recommended purchasing the units. On the other hand, although IVAC received some positive comments on ease of use, speed of temperature determination, and sturdiness, for most individuals completing the evaluation form accuracy was a serious concern. Overall approval for IVAC was very low and purchase was not recommended.

Discussion

The purpose of this study was to test tympanic thermometry against both the gold standard of the rectal thermometer (ED group) and the PA thermometer (ICU group). We sought to determine whether the level of agreement would be high enough to allow us to simply accept tympanic temperature assessment as an alternative to other measures. Finally, we hoped to identify one model of tympanic thermometer that showed better agreement than the others and that therefore could be recommended for purchase.

Table 3 *Difference Data Categorized by Age for Rectal Comparison Group (%)*

ITT Brand	Age	<−0.5°C	−0.5°C to 0°C	0°C	0 to +0.5°C	>+0.5°C	% (n)
IVAC	3–12 mos	5 (1)	10 (2)	5 (1)	35 (7)	45 (9)	100 (20)
	12–36 mos	1 (1)	7 (5)	3 (2)	27 (19)	62 (43)	100 (70)
	>36 mos	9 (1)	9 (1)	9 (1)	9 (1)	64 (7)	100 (11)
Genius	3–12 mos	0	18 (7)	0	33 (13)	49 (19)	100 (39)
	12–36 mos	5 (3)	22 (13)	9 (5)	34 (20)	30 (17)	100 (58)
	>36 mos	20 (1)	40 (2)	0 (0)	20 (1)	20 (1)	100 (5)
Thermoscan	3–12 mos	3 (1)	19 (6)	3 (1)	50 (18)	25 (9)	100 (35)
	12–36 mos	6 (4)	28 (16)	9 (5)	43 (25)	14 (8)	100 (58)
	>36 mos	0	25 (2)	12.5 (1)	50 (4)	12.5 (1)	100 (8)

Initial analyses indicated strong specificity for all ITT models compared to either rectal or PA thermometers. Thus, there was a low incidence of ITT reporting fever in patients without fever. Conversely, however, ITT failed to detect fever in a clinically significant number of patients with fever. As treatment decisions are often based on the presence or absence of fever, the poor ITT sensitivity could potentially result in serious clinical implications.

Assessment of the agreement between ITT and established thermometers (rectal and PA) was not supportive of the continued use of ITT. Although the mean difference between ITT and either rectal or PA temperature did not differ to a vast degree, the variability is cause for concern. This study revealed that ITT-reported temperatures could be expected to vary upwards of 1°C from the patient's actual temperature. In our clinical setting, this degree of error is unacceptable.

A possible limitation of the study, and a possible explanation for the discrepancies found between ITT and established instruments, is measurement error, which is possible with any type of thermometer. The site of measurement is known to be a factor, because of the different tissue — the goal being to measure core temperature. In addition, how the thermometer is used, its speed of calibration to the surrounding temperature, the ambient temperature, and the presence or absence of various body excreta or secretions may also cause measurement error. We made no attempt to account for these factors. Finally, as with all methods, the potential for operator error may confound the measurement. A further limitation of our study was the use of different training methods for each model of thermometer, based on the manufacturer's recommendation. In addition, our study may have been influenced by the use of a single model of thermometer at a time. No attempt was made to randomize the order of the type of ITT used for data collection. Any or all of these factors may account for the difference between temperatures taken at two different sites using different types of technology.

The potential for measurement error suggests the need for repeated measures using all implements if there is any suspicion that a temperature reading is incorrect or if a temperature reading approaches the set diagnostic points for hypothermia or hyperthermia. However, the low sensitivity of the ITT compared to standard measures makes its clinical use questionable. The data from this study suggest that the ITT at its best failed to detect fever in one out of five clients. The client risks associated with this degree of error are self-evident.

Recommendations for Nursing

In general, clients who require temperature assessment should have their temperature taken by standard rectal or oral thermometry. In the select population in which a PA catheter is in place, PAT is the most accurate measurement (Ferrara-Love, 1997; Neirman, 1991). Rectal and oral methods have the advantage of cost efficiency, as these probe covers are less expensive than tympanic covers. In specific populations in which there is no PA and/or in which rectal or oral assessment is inappropriate, such as the unconscious or anesthetized client or the young child with contraindications to RT measurement, ITT is worth considering (Erickson & Yount, 1991).

Education in the use of tympanic thermometry should include the potential for ITT disagreement with other measures. In situations in which comparative core temperature is required or in which inaccuracy is suspected, staff should be educated in the need for repeated measures to identify false measurements. In addition, as temperatures reach diagnostic set points, staff should be encouraged to repeat measures or add a second measure of temperature.

Conclusions

Infrared tympanic thermometers may have many advantages for both clients and health-care professionals. This study, however, raises questions regarding the agreement of ITT with other assessment methods. It is our opinion, based on the results of this study, that ITT requires further research and development before it is used as the procedure of choice. ITT can be used with caution in situations where other methods of temperature assessment are contraindicated.

In closing, the data from this study allow us to recommend the Thermoscan, because of its relatively close agreement with actual RT or PAT readings, for use in specific client populations. Certainly, in the absence of a PA, or in the case of an unconscious or uncooperative client who is at risk of rectal perforation, oral damage, or a broken probe, the tympanic thermometer remains an option.

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Book Review

Reading, Understanding, and Applying Nursing Research: A Text and Workbook
James A. Fain
Philadelphia: F.A. Davis, 1999, 371 pp.
ISBN 0-8036-0227-8

Reviewed by France Bouthillette

With the increasing awareness of professionals as consumers of research findings, the number of textbooks introducing nurses to research is on the rise. *Reading, Understanding, and Applying Nursing Research* is such a text, with undergraduate nursing students, R.N.s returning to school, and practising nurses as the target readership. The author clearly states that the goal of the book is to help the reader understand and evaluate research reports.

In keeping with his goal, Fain starts each chapter with learning objectives and a glossary of terms, and concludes each with a summary of the ideas presented and some learning activities. These well-devised exercises give the reader an opportunity to gain hands-on experience with each of the research steps. Some of the exercises require the learner to locate several research articles. This may place extra demands on the practising nurse using the book as a self-teaching tool. However, conducting a literature search is an important skill for the researcher to develop.

Part I of the book (chapters 1 and 2) introduces nursing research and the research process. Chapter 1 includes definitions of research and scientific method, as well as a discussion of the importance of research in nursing. The author has made good use of resources from several nursing associations, such as the research role of nurses with different educational backgrounds, prepared by the American Nurses' Association, and the Midwest Nursing Research Society Guidelines for Scientific Integrity. These are important guiding documents that are not always readily available. Fain's discussion of scientific method, however, could be confusing for the novice research consumer, his target audience. For instance, scientific research and nursing research

are presented as different entities, and quantitative research is stated to be scientific inquiry while qualitative research is presented as an approach to knowledge structure.

The second chapter provides an overview of the research process, identifying and briefly describing five general steps: Selecting and Defining the Problem; Selecting a Research Design; Methods; Data Analysis; and Utilizing Research.

The first several chapters of Part II (3–8) deal with each step in greater detail, succinctly and clearly addressing the essential concepts of quantitative research. However, the author's failure to specify that only quantitative research will be covered in these chapters could easily be mistaken by a novice reader as indicating that only quantitative research follows the scientific method. There is no discussion of qualitative research before chapter 9, where qualitative and quantitative designs are described. This chapter (written by a collaborator) presents an interesting view of the two types of research design — as on a continuum, with quantitative emphasis at one end and qualitative at the other. Chapters 10 through 12 cover the different qualitative approaches. Written by research experts in phenomenology, grounded theory, and ethnography, these contributions summarize well the methods and their underlying principles.

Part III presents the concepts related to interpreting research findings, critiquing research reports, and utilizing research. The discussion on interpreting research findings is limited, but combined with the general critiquing criteria it should offer a starting place for the reader. Also included are examples of a quantitative and a qualitative critique; however, these are brief and provide few links with the concepts presented in earlier chapters. The final chapter of the book consists of a good overview of the many research utilization models and a brief discussion of each stage in the research utilization process.

The workbook component includes review and multiple-choice questions relating to each chapter. The questions focus on content. Several sections also feature critical-thinking questions, calling for an application of knowledge. Since no answers are supplied for the workbook, the volume itself will likely be more useful as a text for a research course than as a self-teaching manual.

Reading, Understanding, and Applying Nursing Research: A Text and Workbook is a valuable addition to the literature in this field. Its author has managed to present complex knowledge in a clear manner, and it includes many good exercises to facilitate the learning process. It will

probably function better as a textbook for an introductory course than as a tool for self-education. Nurses interested in qualitative research might find the book insufficiently comprehensive in this area.

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Erratum

Dans le numéro 3 du volume 30 de la Revue, pages 99–121, voir « Une intervention infirmière familiale systémique appliquée dès la naissance d'un enfant ayant une déficience : les effets sur l'adaptation des parents », nous avons omis d'inclure le nom des instances qui ont financé la recherche de Madame Diane Pelchat, Ph.D., soit le Conseil québécois de recherche sociale (CQRS, 1993–1995) et le Programme national de recherche pour le développement en santé (PNRDS, 1994–1998). Nous présentons toutes nos excuses à les auteures, ainsi qu'à ces organismes, pour cette omission.

In the article in Vol. 30, No. 3, pages 99–121, entitled "A systemic family nursing intervention following the birth of a handicapped child: Effect on parental adaptation," we omitted the name of the organizations that financed the research. These were the Conseil québécois de recherche sociale (CQRS, 1993–95) and the National Health Research and Development Program (NHRDP, 1994–98). We apologize to the authors, Diane Pelchat, Ph.D., et al., and to these organizations for the omission.

Call for Papers /Appel de soumission d'articles

Alternative Treatment & Symptom Management
March 2000 (vol. 31, no. 4)

The implementation of alternative treatment and symptom management is rapidly increasing and is of interest to nurses across the full spectrum of patient populations and conditions. This issue will focus on novel or non-traditional treatments and management of symptoms within the realm of nursing practice. Of particular interest are studies from a nursing-science perspective that address but are not limited to the symptoms of pain, fatigue, stress, anxiety, fear, and depression. We hope to publish the latest research as well as papers that describe the development or validation of theoretical or conceptual perspectives. Priority will be given to papers that deal with the evaluation and implementation of alternative treatments and management of symptoms in vulnerable populations, such as infants and children, the elderly, and individuals with cognitive, developmental, or communication disabilities, and the effect of this management on the individual, the family, and society.

Guest Editor: Dr. Bonnie Stevens
Submission Deadline: July 15, 1999

Primary Health Care
June 2000 (vol. 32, no. 1)

Primary Health Care is considered to be essential health care that is based on practical, scientifically sound, and socially acceptable methods and technologies which are universally accessible to people in their local communities. This issue of the CJNR will focus on the spectrum of papers related to primary health care, including theoretical development, empirical studies of primary health care interventions and outcomes, and policy directives supporting primary health care. The foci of empirical work may include specific populations (e.g., vulnerable groups), health systems, or the community level. A range of methods and research approaches are welcome including evaluation studies, instrument development, validation studies, surveys, and qualitative studies. Priority will be given to papers which advance our knowledge of nursing's role in primary health care.

Guest Editor: Dr. Karen Chalmers
Submission Deadline: October 15, 1999

Please send manuscripts to: The Editor, *Canadian Journal of Nursing Research*
McGill University School of Nursing, 3506 University Street
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Bulletin Board

October 1–3, 1999 – Boston, MA

16th Annual Conference of the American Association for the History of Nursing with optional pre-conference Sept. 30th on Teaching the History of Nursing. Sponsors: American Association for the History of Nursing and Boston College. Contact: Continuing Education Department, Boston College, (617) 552-4252, or www.aahn.org/

New ICCHNR Website

The UK-based organization International Conferences on Community Health Nursing Research, chaired by Dr. Lisbeth Hockey, has established a website aimed at promoting international exchange about CHN research and promoting international CHN research conferences. Open to all who are interested: www.hull.ac.uk/Hull/health_ps/ICCHNR/index.html

All information appearing under the Bulletin Board is accepted by written request only.

The University of Western Ontario
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The Faculty of Health Sciences at The University of Western Ontario invites applications for a faculty position in the **School of Nursing**, beginning January 1 or July 1, 2000. This is a tenure-track appointment at the rank of assistant or associate professor. Responsibilities include undergraduate and graduate teaching, conduct of research, publication, and service to the community.

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Dr. Angelo N. Belcastro, Dean
Faculty of Health Sciences
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The University of Western Ontario
London, Ontario N6A 5C1 Canada

The deadline for receipt of applications is September 30, 1999.

Positions are subject to budget approval. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and Permanent Residents of Canada. The University of Western Ontario is committed to employment equity, welcomes diversity in the workplace, and encourages applications from all qualified individuals including women, members of visible minorities, aboriginal persons, and persons with disabilities.

Call for Abstracts

The University of Colorado Health Sciences Center School of Nursing is sponsoring an International track as part of the 25th National Primary Care Nurse Practitioner Symposium to be held July 13–16, 2000, in Keystone Resort, Colorado. The purpose of the track is to support the development of nurse practitioners internationally, through sharing of ideas and networking. Papers can include but are not to be limited to areas of practice, professional development, education, and research. Abstracts are being accepted for oral or poster sessions.

Guidelines for Submission

Abstract must be typed, limited to one page, single spaced, with $1^1/_2$" left and 1" right margins. Only abstracts in English will be accepted.

Include author curriculum vitae with author's postal, telephone, e-mail, and fax contact information.

Deadline is September 15, 1999.

If initial abstract is sent via fax or electronic e-mail, an original copy of the abstract must be followed up by mail.

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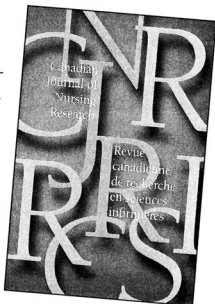
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Procedure: Three double-spaced typewritten copies of the manuscript on 8 ½" x 11" paper are required. Articles may be written in French or English. Authors are requested not to put their name in the body of the text, which will be submitted for blind 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, *Canadian Journal of Nursing Research*, School of Nursing, 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.

Abstract: Research articles must include a summary of 100–150 words containing information on the purpose, design, sample, findings, and implications. Theory and review papers must include a statement of the principal issue(s), the framework for analysis, and a summary of the argument.

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

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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.

Renseignements à l'intention des auteurs

La *Revue canadienne de recherche en sciences infirmières* est publiée quatre fois par année. Son mandat est de diffuser la recherche en sciences infirmières qui a trait au développement des connaissances dans la discipline et l'analyse de la mise en pratique de ces connaissances. La revue accepte également des articles de recherche liés à l'éducation, à l'histoire de même que des articles liés à la méthodologie, la théorie et l'analyse critique qui favorisent le développement des sciences infirmières. Nous vous invitons à nous faire parvenir également vos commentaires sur les articles publiés.

Modalités : Les textes doivent être soumis en trois exemplaires, être dactylographiés à double interligne sur des feuilles 216 mm x 279 mm et être adressés à la rédactrice en chef, à la *Revue canadienne de recherche en sciences infirmières*, Université McGill, École des sciences infirmières, 3506, rue University, Montréal, QC H3A 2A7. Il est entendu que les articles soumis n'ont pas été simultanément présentés à d'autres revues. Veuillez également inclure, avec la soumission, une déclaration de propriété et de cession de droits d'auteurs. Finalement, afin de garder l'anonymat lors du processus de révision, veuillez ne pas inclure les noms des auteurs dans le texte.

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La présentation du manuscrit doit respecter les normes du *Publication Manual of the American Psychological Association*, 4e édition, 1994. Notamment, les figures, tableaux, illustrations et références doivent être présentés selon les normes prescrites. Il est suggéré de ne pas avoir recours aux notes de bas de page.

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