

Canadian  
Journal of  
Nursing  
Research

Revue  
canadienne  
de recherche  
en sciences  
infirmières

March / mars 2002 Volume 33 No. 4

# **Canadian Journal of Nursing Research** **Revue canadienne de recherche en sciences infirmières**

## **EDITOR / RÉDACTRICE EN CHEF**

Laurie N. Gottlieb, PhD, McGill University

## **ASSOCIATE EDITOR / RÉDACTRICE EN CHEF ADJOINTE**

Anita J. Gagnon, PhD, McGill University

## **MANAGING EDITOR / ADMINISTRATRICE DE LA REVUE**

Joanna Toti

## **COPY EDITORS / RÉVISEURES**

Jane Broderick (English)

Lou Lamontagne (Français)

## **SECTION EDITORS / COLLABORATIONS SPÉCIALES**

### **Abuse & Violence –**

L'abus et la violence

Dr. Jacquelyn Campbell

*Johns Hopkins University*

### **Addiction – La dépendance**

Dr. Pamela Ratner

*University of British Columbia*

### **Alternative Therapies**

& Symptom Management –

Thérapies de remplacement

et gestion de symptômes

Dr. Bonnie Stevens

*University of Toronto*

### **Coping / Adaptation –**

Le soutien et l'adaptation

Dr. Judith A. Ritchie

*McGill University*

### **Economics of Nursing Care –**

L'aspect économique

des soins infirmiers

Dr. Gina Browne

*McMaster University*

### **Chronicity – La chronicité**

Dr. Sally Thorne

*University of British Columbia*

### **Culture & Gender – La culture**

et l'appartenance sexuelle

Dr. Nancy Edwards

*University of Ottawa*

### **Ethics, Values, & Decision-**

Making – L'éthique, les valeurs

et le processus décisionnel

Dr. Franco A. Carnevale

*McGill University*

### **Gerontology – La gérontologie**

Dr. Carol McWilliam

*University of Western Ontario*

### **Health Promotion –**

La promotion de la santé

Dr. Marilyn Ford-Gilboe

*University of Western Ontario*

### **Health Resources Planning –**

La planification de ressources

en matière de santé

Dr. Linda O'Brien-Pallas

*University of Toronto*

### **Home Care – Les soins à la maison**

Dr. Patricia McKeever

*University of Toronto*

### **International Nursing –**

Les sciences infirmières

sur la scène internationale

Dr. Susan French

*McMaster University*

### **Nursing-Care Effectiveness –**

L'efficacité des soins infirmiers

Dr. Sandy LeFort

*Memorial University of Newfoundland*

### **Mental Health – La santé mentale**

Dr. Nicole Ricard

*Université de Montréal*

### **Continuity & Transitional Care –**

La continuité et les soins

liés à la transition

Dr. Margaret B. Harrison

*Loeb Health Research Institute, Ottawa*

### **Philosophy / Theory –**

La philosophie / La théorie

Dr. Joy Johnson

*University of British Columbia*

### **Primary Health Care –**

Les soins primaires

Dr. Karen I. Chalmers

*University of Manitoba*

### **Research Utilization – L'utilisation**

des résultats de recherche

Dr. Heather F. Clarke

*Registered Nurses Association*

*of British Columbia*

### **Women's Health –**

La santé des femmes

Dr. Anita J. Gagnon

*McGill University*



CONTENTS — TABLE DES MATIÈRES

---

***Focus: Health Resource Planning /  
Planification des ressources de santé***

- 3 Guest Editorial and Discourse / *Collaboration spéciale et discours :  
Where to From Here?*  
**Linda O'Brien-Pallas**
- 15 The Effects of Organizational Culture on Nursing  
Professionalism: Implications for Health Resource Planning  
*Résumé : Les effets de la culture organisationnelle sur le  
professionnalisme des infirmières : implications pour la planification  
des ressources en santé*  
**Milisa Manojlovich and Shaké Ketefian**
- 35 A Hospital-Level Analysis of the Work Environment  
and Workforce Health Indicators for Registered Nurses  
in Ontario's Acute-Care Hospitals  
*Résumé : Une analyse de l'environnement de travail en milieu  
hospitalier et des indicateurs de santé au travail pour les infirmières  
autorisées travaillant dans les hôpitaux de soins actifs en Ontario*  
**Judith Shamian, Michael Steven Kerr,  
Heather K. Spence Laschinger, and Donna Thomson**
- 51 Methodological Issues in Health Human Resource Planning:  
Cataloguing Assumptions and Controlling for Variables in  
Needs-Based Modelling  
*Résumé : Questions d'ordre méthodologique dans la planification  
des ressources humaines : catégoriser les hypothèses et maîtriser  
les variables dans les modèles fondés sur les besoins*  
**Gail Tomblin Murphy**
- 71 Nursing-Related Determinants of 30-Day Mortality  
for Hospitalized Patients  
*Résumé : Les facteurs relatifs aux soins infirmiers ayant une incidence  
sur le taux de mortalité sur trente jours chez les hospitalisés*  
**Ann E. Tourangeau, Phyllis Giovannetti, Jack V. Tu,  
and Marilynn Wood**

- 89 Why Nurses Are Calling in Sick:  
The Impact of Health-Care Restructuring  
*Résumé : Les raisons pour lesquelles les infirmières s'absentent  
du travail : conséquences de la restructuration des soins de santé*  
**Leona R. Zboril-Benson**
  - 109 Designer's Corner / *Le Coin du concepteur* :  
Health Human Resource Planning for the New Millennium:  
Inputs in the Production of Health, Illness, and Recovery in  
Populations  
**Stephen Birch**
  - 115 Happenings / *L'Événement* :  
Nursing Matters: The Nursing and Health Outcomes Project  
of the Ontario Ministry of Health and Long-Term Care  
**Dorothy M. Pringle and Peggy White**
  - 123 A Survey of Web-Based Health Human Resource  
Planning Activities in Canada  
**Gail Tomblin Murphy and Debra Barrath**
- 
- 139 Sense of Self: Voices of Separation and Connection  
in Women Who Have Experienced Abuse  
*Résumé : Le sens du soi : le sentiment de séparation  
et de connexion chez les survivantes de violence conjugale*  
**Ruth Ann Belknap**
  - 155 Nurses Begin a National Plan for the Integration of  
Supportive Care in Health Research, Practice, and Policy  
*Résumé : Les infirmières amorcent un plan national d'intégration  
des soins de soutien aux sphères de la recherche, de la pratique  
et des orientations*  
**Lorna Butler, Barbara Love, Marlene Reimer, Gina Browne,  
Barbara Downe-Wamboldt, Roy West, and Valerie Banfield**
  - 171 Recruitment of Community-Dwelling Older Adults  
for Nursing Research: A Challenging Process  
*Résumé : Le recrutement de personnes âgées résidant dans la  
communauté pour les besoins de la recherche en sciences infirmières :  
une démarche exigeante*  
**Pamela Hawranik and Verna Pangman**
  - 185 CJNR's First "Reviewer of the Year":  
Dr. Judith Wuest for the Year 2000  
**Anita J. Gagnon**
  - 187 Cumulative Index Volume 33
  - 197 Call for Papers / *Appel de soumission d'articles*
  - 200 Call for Reviewers / *Examinatrices recherchées*
  - 205 Information for Authors / *Renseignements à l'intention des auteurs*

## GUEST EDITORIAL AND DISCOURSE

# Where to From Here?

Linda O'Brien-Pallas

This issue of the *Canadian Journal of Nursing Research* focuses on health human resource planning (HHRP), a means of determining the appropriate quantity, mix, and distribution of health personnel. The different kinds of clinical and non-clinical staff who make each individual and public health intervention happen are the most important inputs of the health system (World Health Organization [WHO], 2000). Many consider that the continuous cycles of over- and under-supply of health human resources worldwide reflect inadequate projection methods for estimating future requirements for expanding health systems and/or a failure to consider the evidence supplied by labour market trends. HHRP in most countries has been poorly conceptualized, intermittent, uneven in quality, profession-specific in nature, lacking in vision, and lacking in data upon which to base sound decisions. To ensure efficiency and effectiveness, planning activities should be needs-based, responsive to a changing system, and outcomes-directed.

There is no unambiguous “right” number and mix of health professionals (O'Brien-Pallas, Birch, Baumann, & Tomblin Murphy, 2001). Rather, health-provider requirements will be determined by broader societal decisions concerning the commitment of resources, funding and delivery of programs, and level and mix of services. Although there may always be more that *should* be done to meet a population's needs in terms of services, whether more *will* be done depends on what must be forgone in order to provide the additional resources — considerations that are essentially subjective.

Globally, the evidence suggests that not many countries have made the link between population health outcomes and planning, quality of

---

*Linda O'Brien-Pallas, RN, PhD, holds the CHSRF/CIHR National Chair in Nursing Human Resources and is Professor, Faculty of Nursing, University of Toronto, Ontario, Canada. She is a Co-Principal Investigator of the Nursing Effectiveness, Utilization and Outcomes Research Unit for the University of Toronto site.*

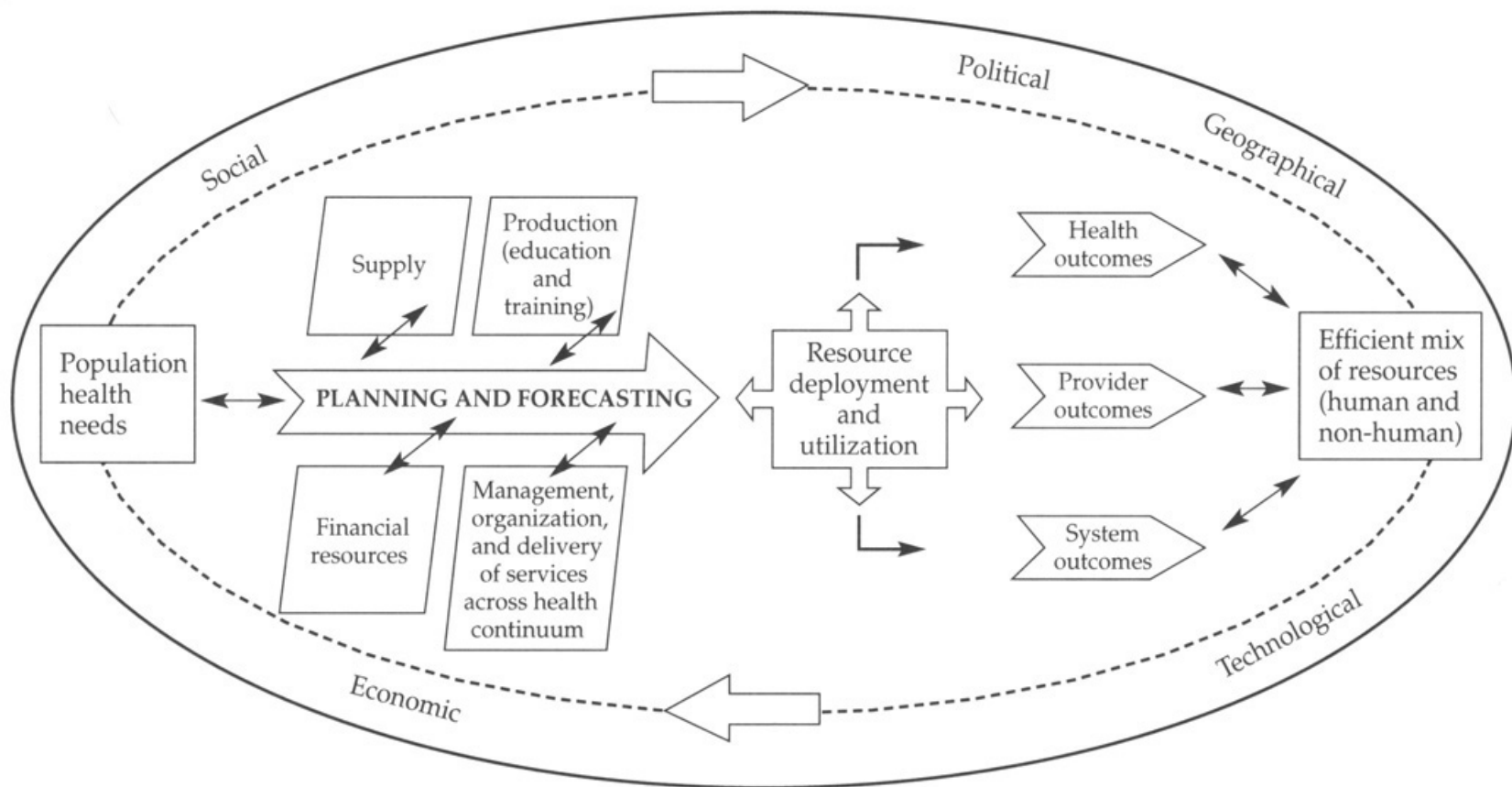
work environments, and recruitment and retention of nursing personnel. In 2001, despite more than 75 years of expressed concern about cycles of shortages and surpluses of nursing personnel, the nursing workforce situation is critical. Never before has a demographic shift such as the baby boomer bulge coincided with such a challenging array of professional choices for young people. In order to maintain our current workforce and provide an attractive and competitive opportunity for future nurses, we must address the workplace concerns of nurses and conceptualize these as part of the HHRP framework. A recently completed policy synthesis of the nursing workforce in Canada (Baumann et al., 2001) identifies a composite of key issues currently facing it: shortage of qualified personnel (with those who remain experiencing work overload); unsafe work environments; lack of support and leadership; scheduling, flexibility, stress, and control issues; lack of respect and lack of influence; and poorly rewarded efforts. While a variety of authors have conceptualized these issues in different ways and included contextual adjustments to reflect international realities, the themes are common across studies.

How, then, can researchers and policy and management decision-makers make sense of these two overwhelming and often conflicting dialogues, research and social? How can nurses find meaning and satisfaction in their work? How can the population benefit from our knowledge about these issues? Gottlieb and Gordon (1999) challenge the research community to make sense of the work that has been done.

As with any other journey, unless we have a road map to provide direction and indicate the overall terrain leading to our destination, the odds are small that we will take the most direct route. According to Hall (1993), the human resource process comprises three inter-related steps: planning, production, and management. The focus on one component at the expense of the others does little to ensure an effective and efficient health-care system (O'Brien-Pallas, Baumann, Birch, & Tomblin Murphy, 2000). Yet a review of the HHRP work done to date reveals that these conceptual linkages have not been made.

Given that many routes have been taken towards HHRP and that these do not seem to have been built upon each other, we have created a system-based framework to guide our inquiry. Building on Andersen's (1995) service utilization model, Donabedian's (1966) quality of care framework, Leatt's conceptualization of technology in human services organizations (Leatt & Schneck, 1981), and the work the Canadian think tank summarized by Kazanjian, Pulcins, and Kerluke (1992), our conceptual model considers the key elements of human

**Figure 1** *Health Human Resources Conceptual Framework*



O'Brien-Pallas, L., Tomblin Murphy, G., Baumann, A., & Birch, S. (2001); adapted from O'Brien-Pallas and Baumann (1997).

resource planning. This dynamic, open-system-based framework has been selected to guide decision-making about elements that should be considered in human resource planning (Canadian Institute for Health Information, 2001). The framework is based on the following considerations.

*Population Characteristics Related to Health Levels and Risks (Needs-Based Factors)* reflect the multivariate characteristics of individuals in the population that create the demand for curative as well as preventative health services. Population health need is not an additive function, and it is influenced by several mediating factors (Eyles, Birch, & Newbold, 1993) such as actual and perceived population health status, socio-economic status, demographic characteristics, enabling and predisposing factors, and health behaviours (Aday & Andersen, 1974). Health need is directly or indirectly influenced by social, cultural, political, contextual, geographical, environmental, and financial factors. Population health need is also influenced by the determinants of health, the collective label given to the multiple factors that are thought to contribute to the health of populations. They include such factors as people's biological endowment and individual responses, the social and physical environment in which they live, the economic conditions (i.e., productivity and wealth) of their society, and the accessibility and quality of their health-care system.

*Planning and Forecasting* reflect the array of methodologies used to predict service requirements and the numbers of providers needed to deliver these services. The choice of the modelling approach is often influenced by data availability. Historically, supply-based models have been used most frequently for forecasting and planning because of ease of data access. Lavis and Birch (1997) note that there is no unambiguous "right" way to model human resources. Rather, the conceptual basis for human resource planning will depend on the question being asked. Do we want to know how many nurses or physicians are required to continue serving populations in the way they are currently served? Or how many are required to support the services needed to meet all or a proportion of the expected needs of the population? Or how many are required to satisfy the expected development and plans for the future provision of health-care services? Birch, Lavis, Markham, Woodward, and O'Brien-Pallas (1994) refer to these three approaches to human resource planning as utilization-based, needs-based, and effective demand-based. The unit of analysis for the three approaches is the same (e.g., physician consultations, dentist courses of treatment, nursing hours). However, the underlying driver of this measure differs among the approaches, reflecting differences in how a society views the



delivery of health care, the provision of services, the population's needs, and the commitment of scarce resources.

In some ways, each approach builds upon the principles of the previous one and introduces additional considerations (Birch et al., 1994). Although this might be seen as enriching the applicability of the approaches to epidemiological, economic, and political realities and thus enhancing the policy relevance of the analyses, this will depend on the philosophical basis of the particular health-care system being studied. For example, in societies where health care is delivered through private markets and access to services is determined by willingness and ability to pay at the individual level, there would be little value in basing future nurse or other health-provider requirements on the estimated care needs of the population, or the estimated future commitment of government resources to health care, since neither of these factors will be important in determining the future deployment of available health providers. Thus the future plans for funding, delivery, and configuration of services determine the appropriate approach.

Forecasting and planning must be seen as a continuous quality-improvement process that is updated regularly. Longer-range projections involve greater uncertainty of the planning variables than intermediate-range projections (Cooper, Laud, & Dietrich, 1998; O'Brien-Pallas et al., 1998).

*Supply* reflects the actual number, type, and geographic distribution of regulated and unregulated providers available to deliver health services at a given point. Supply is fluid in nature and is influenced by several factors, including the International Labour Organization's (n.d.) Key Indicators of the Labour Market. These include but are not limited to participation rates, provider-to-population ratios, demographic and educational characteristics of individual providers, full-time and part-time status, employment sector, underemployment, unemployment, and inactivity. Death, retirement, and emigration and immigration rates influence supply at any given point. The role — including scope of practice — undertaken by any regulated provider is determined by licensing/regulation standards of practice. The role of unregulated workers is excluded from licensure/regulation and is generally determined by employers.

*Financial Resources* reflects the overall portion of the Gross Domestic Product that is dedicated to health and education. Finances available for the health system can reflect both public and private payers. Health system inputs must consider the appropriate balance between human and physical capital. Human capital decisions concern

the appropriate quantity, mix, and distribution of health services. Finding this balance requires continuous monitoring, careful choices made in the context of the financial realities of the situation, and the use of research evidence to ensure that population health needs are addressed effectively and efficiently. The mix of financial resources for health must strike a balance between non-human resources (e.g., technology, drugs, hospital beds) and human resources (WHO, 2000).

*Production* involves the education and training of future health providers. The array of preparatory programs include both university education and on-the-job training. The number of formal positions offered by an educational institution is influenced by financial resources and designated number of funded places. The link between population health needs and future capacity to meet those needs ought be considered in setting production targets for places in any health discipline.

*Management, Organization, and Delivery of Health Services* are key variables influencing the delivery of care across the continuum. Management and organizational characteristics influence the amount and quality of care provided, provider health and satisfaction, and costs associated with the delivery of services. Organizational characteristics such as structural arrangements, degree of formalization and centralization, environmental complexity, and culture influence the way work gets done and impacts on outcomes. In nursing, for example, it has been demonstrated that managerial resource-allocation decisions can have a negative impact on job satisfaction (Blegen, 1993; Kramer & Schmalenberg, 1988) and health (Amick et al., 1998; Josephson & Vingard, 1998), as well as on patient outcomes (Aiken, Smith, & Lake, 1994; Blegen, Goode, & Reed, 1998; Blegen & Vaughn, 1998; Brooten & Naylor, 1995; Kovner & Gergen, 1998), patient satisfaction with the care received (Leiter, Harvie, & Frizzell, 1998; McGillis Hall et al., 2001), level of productivity (O'Brien-Pallas, Thomson, Alksnis, & Bruce, 2001), and the number of visits a client receives in the community (O'Brien-Pallas, Irvine Doran, et al., 2001).

*Resource Deployment and Utilization* reflects the amount and nature of the resources deployed to provide health services to the population at large. Utilization reflects the nature and type of resources used by the population to meet health needs. The efficiency and effectiveness of service delivery depends to a great extent on the effective deployment and use of personnel (Ozcan, Taranto, & Horney, 1995). The World Health Organization (2000) notes that provision of health care involves putting together a considerable number of resource inputs to deliver an extraordinary array of service outputs. Decisions concern-



ing the deployment and use of personnel across all sectors of the system influence access to services and utilization by the population and outcomes.

*Health Outcomes* refers to the health status of the population. Outcomes assessment has two broad objectives: to establish effectiveness of care, and to assess quality of care (Foz & Fine, 2000). These outcomes are classified into those that focus on individual health and those that focus on the health of populations or communities. Similar to the US Public Health Services (Aday, Begley, Lairson, & Slater, 1998) and Roos et al. (1999), our team of researchers (Linda O'Brien-Pallas, Gail Tomblin Murphy, Stephen Birch, Christine Alksnis, Andrea Baumann, and Gerarda Darlington) have developed many indicators of health status from both primary and secondary sources, including population health surveys, vital statistics mortality data, cancer registry data, hospital discharge diagnoses, and the diagnoses appearing on physicians' claims for visits. Examples of these indicators are: premature mortality rate (PMR — i.e., death before 75); socio-economic status (e.g., education, unemployment rates, percentage of single mothers, housing costs); life expectancy; standardized mortality rates; mortality from cancer, injury, and chronic diseases; disease incidence; medical conditions associated with poor functional status and poor perceived health status; low birth weight; prenatal care outcomes; and poverty. These indicators capture various dimensions of community health, ranging from mortality/morbidity due to cancer, injuries, and chronic diseases, to disability among youths, to medical conditions associated with functional limitations and restricted-activity days among the elderly. Even though databases show great promise and it is imperative that they be used to inform health-related decisions and policy, it must be recognized that the relationship between health and health care is not a straightforward one.

*Provider Outcomes* include the health status of providers, retention rates, turnover rates, sick time, job satisfaction, and levels of burnout and other affective responses to work and the work environment. At the micro level, several studies have indicated that the work environment and job characteristics influence provider health (Irvine & Evans, 1995; O'Brien-Pallas, Baumann, & Villeneuve, 1994) and the quality of care provided to patients. Research across occupations suggests that long periods of job strain affect personal relationships and result in increased sick time, conflict, job dissatisfaction, turnover, and inefficiency. Job strain exacerbates medical problems and increases the risk of musculoskeletal injury and accidents, burnout, illness, substance abuse, and smoking (Baumann et al., 2001).

*System Outcomes* include the costs associated with resources dedicated to health services. These include hospitalization and re-admission rates, home visits, expenditures on the various health sectors, the number of people treated in each health sector, the neediness of the population being treated, case intensity, cost efficiency, discharge efficiency, proportion of acute versus non-acute care, outpatient/inpatient surgery rates, and bed occupancy rates.

*Context* (political, social, geographical, technological, and economic factors and “shocks to the system”). At the population level, there are many determinants of health besides medical care. Reconceptualizing the determinants of health as a means of health policy, Evans, Barer, and Marmor (1994) found that physical environment, social environment, individual behaviour, genetic endowment, and medical care are all factors in the health of a population. Population health is concerned with people’s living and working environment, the conditions that enable people to make healthy choices, and the services that promote and maintain health (Advisory Committee on Population Health, 1994). Biological factors (including genetic predisposition to a specific disease), environmental factors (such as pollution), and individual socio-economic characteristics (poverty, unemployment, lack of education) have a strong impact on the health of a population (Advisory Committee on Population Health; Roos et al., 1995). Shocks to the system are unanticipated events that influence the health system and the human resource process.

*Efficient Mix of Human and Non-human Resources* reflects the number and type of resources that must be deployed in order to achieve the best population, provider, and system outcomes. Providing an efficient mix of human and non-human resources is different from simply providing services, in that the outcomes of the process are considered in the former.

### Summary

Although this conceptual framework is easy to understand, the data requirements for the mathematical model that underpins the framework are complex and must be defined carefully. In our framework, simulations of the health system are used to provide needs-based estimates that are aimed at optimizing outcomes. This type of model builds on research conducted at the macro, meso, and micro levels in order to reflect the complexity of relationships in the health human resource process.

The papers in this issue of the Journal provide insight into specific constructs of the model. At the macro level, Tomblin Murphy explores methodological challenges in HHRP research. She examines common assumptions and the validity of their use in modelling in all aspects of the proposed framework. Tourangeau and colleagues report on the impact of hospital nurse-staffing decisions on 30-day mortality rates. Their model adds to our knowledge of the relationships among the management, deployment, and utilization of nursing services and patient/population outcomes. Shamian and colleagues explore the relationship between hospital-level indicators of the work environment and aggregated indicators of health and well-being for registered nurses employed in acute-care hospitals in the province of Ontario. This paper contributes to our understanding of how management decisions regarding the work environment influence nurse outcomes. Manojlovich and Ketafian explore the conflict between the practice of nursing and the organizational structure of many hospitals. This study provides insight into the management aspects of how the work unit is organized and the process of care delivery. Zboril-Benson examines the reasons for nurse absenteeism in the province of Saskatchewan.

Birch describes the need for the planning process to take into account demographic changes in both populations and provider groups. A major challenge in modelling health human resources is access to meaningful databases for planning purposes. Pringle describes a unique Ontario initiative currently underway to develop and validate a nurse-sensitive set of data that will be routinely collected and will enhance HHRP in that province. Since the science that underpins HHRP is complex and rapidly changing, few books have been written on the subject. Reflecting the dynamic nature of the science, Tomblin Murphy and Barrath provide an excellent review of "grey literature" and useful Web sites for those interested in HHRP.

## References

- Aday, L.A., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research*, 9(3), 208–220.
- Aday, L., Begley, C., Lairson, D., & Slater, C. (1998). *Evaluation the healthcare system: Effectiveness, efficiency, and equity* (2nd Ed.). Chicago: Health Administration Press.
- Advisory Committee on Population Health. (1994). *Strategies for population health: Investing in the health of Canadians*. Ottawa: Author.
- Aiken, L.H., Smith, H.L., & Lake, E.T. (1994). Lower Medicare mortality among a set of hospitals known for good nursing care. *Medical Care*, 32(8), 771–787.

- Amick, B.C., Kawachi, I., Coakley, E.H., Lerner, D., Levine, S., & Colditz, G.A. (1998). Relationship of job strain and iso-strain to health status in a cohort of women in the United States. *Scandinavian Journal of Work, Environment and Health*, 24(1), 54–61.
- Andersen, R. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(3), 1–10.
- Baumann, A., O'Brien-Pallas, L., Armstrong-Stassen, M., Blythe, J., Bourbonnais, R., Cameron, S., Irvine Doran, D., Kerr, M., McGillis Hall, L., Vézina, M., Butt, M., & Ryan, L. (2001, June). *Commitment and care: The benefits of a healthy workplace for nurses, their patients and the system*. Ottawa: Canadian Health Services Research Foundation and Change Foundation.
- Birch, S., Lavis, J., Markham, B., Woodward, C., & O'Brien-Pallas, L. (1994). *Nursing requirements for Ontario over the next twenty years: Development and application of estimation methods*. (Working Paper Series 94–13.) Hamilton, ON: McMaster University, CHEPA.
- Blegen, M.A. (1993). Nurses' job satisfaction: A meta-analysis of related variables. *Nursing Research*, 42(1), 36–41.
- Blegen, M.A., Goode, C.J., & Reed, L. (1998). Nurse staffing and patient outcomes. *Nursing Research*, 47(1), 43–50.
- Blegen, M.A., & Vaughn, T. (1998). A multisite study of nurse staffing and patient occurrences. *Nursing Economics*, 16(4), 196–203.
- Brooten, D., & Naylor, M.D. (1995). Nurses' effect on changing patient outcomes. *Image: Journal of Nursing Scholarship*, 27(2), 95–99.
- Canadian Institute for Health Information. (2001). *Future development of information to support the management of nursing resources: Recommendations*. Ottawa: Author.
- Cooper, R.A., Laud, P., & Dietrich, C.L. (1998). Current and projected workforce of nonphysician clinicians. *Journal of the American Medical Association*, 280(9), 788–794.
- Donabedian, A. (1966). Evaluating the quality of medical care (Part 2). *Milbank Memorial Fund Quarterly*, 44(3), 166–203.
- Evans, R., Barer, M., & Marmor, T. (1994). *Why are some people healthy and others not? The determinants of health of populations*. New York: Aldine De Gruyter.
- Eyles, J., Birch, S., & Newbold, B. (1993). Equity and health care: Analysis of the relationship between need for health care and the utilization of nursing services in Canada. *Canadian Journal of Nursing Research*, 25(4), 27–45.
- Foz, P., & Fine, D. (2000). *Designing health care for populations*. San Francisco: Jossey-Bass.
- Gottlieb, L.N., & Gordon, S. (1999). Addressing the nursing shortage: Researchers and clinicians unite. *Canadian Journal of Nursing Research*, 31(3), 3–5.
- Hall, T. (1993). *Human resources for health: Models for projecting workforce supply and requirements*. Geneva: World Health Organization.
- International Labour Organization. (n.d.). *Key indicators of the labour market*. Retrieved February 14, 2002, from [www.ilo.org/public/english/employment/strat/kilm/indicats.htm](http://www.ilo.org/public/english/employment/strat/kilm/indicats.htm)

- Irvine, D.M., & Evans, M.G. (1995). Job satisfaction and turnover among nurses: Integrating research findings across studies. *Nursing Research*, 44(4), 246–253.
- Josephson, M., & Vingard, E. (1998). Workplace factors and care seeking for low-back pain among female nursing personnel. MUSIC-Norrtälje Study Group. *Scandinavian Journal of Work, Environment and Health*, 24(6), 465–472.
- Kazanjian, A., Pulcins, I.R., & Kerluke, K. (1992). A human resources decision support model: Nurse deployment patterns in one Canadian system. *Hospital Health Services Administration*, 37(3), 303–319.
- Kovner, C., & Gergen, P.J. (1998). Nurse staffing levels and adverse events following surgery in U.S. hospitals. *Image: Journal of Nursing Scholarship*, 30(4), 315–321.
- Kramer, M., & Schmalenberg, C. (1988). Magnet hospitals: Institutions of excellence. Part II. *Journal of Nursing Administration*, 18(2), 11–19.
- Lavis, J.N., & Birch, S. (1997). Applying alternative approaches to estimating nurse requirements. The answer is.... Now what was the question? *Canadian Journal of Nursing Administration*, 10(1), 24–44.
- Leatt, P., & Schneck, R. (1981). Nursing subunit technology: A replication. *Administrative Science Quarterly*, 26(2), 225–236.
- Leiter, M.P., Harvie, P., & Frizzell, C. (1998). The correspondence of patient satisfaction and nurse burnout. *Social Science and Medicine*, 47(10), 1611–1617.
- McGillis Hall, L., Irvine, D., Baker, G.R., Pink, G., Sidani, S., O'Brien Pallas, L., & Donner, G. (2001). *A study of the impact of nursing staff mix models and organizational change strategies on patient, system and caregiver outcomes*. Final Report. Toronto: Faculty of Nursing, University of Toronto.
- O'Brien-Pallas, L.L., & Baumann, A. (1997). *Health human resources planning in nursing in the province of Ontario*. Toronto: Nursing Effectiveness, Utilization and Outcomes Research Unit, University of Toronto and McMaster University.
- O'Brien-Pallas, L., Baumann, A., Birch, S., & Tomblin Murphy, G. (2000). Health human resource planning in home care: How to approach it – that is the question. *Healthcare Papers*, 1(4), 53–59.
- O'Brien-Pallas, L., Baumann, A., Donner, G., Lochhass Gerlach, J., Luba, M., Lakats, L., Armasi, Y., & Mallette, C. (1998). *Health human resources: An analysis of forecasting models*. Ottawa: Canadian Nurses Association.
- O'Brien-Pallas, L.L., Baumann, A., & Villeneuve, M. (1994). The quality of nursing work life. In J. Hibberd & M. Kyle (Eds.), *Nursing management in Canada* (pp. 391–409). Toronto: Saunders.
- O'Brien-Pallas, L., Birch, S., Baumann, A., & Tomblin Murphy, G. (2001). *Integrating workforce planning, human resources, and service planning*. Workshop on Global Health Workforce Strategy (Annecy, France, December 9–12, 2000). Geneva: World Health Organization. Available: [www.who.int/health-services-delivery/human/workforce/papers/integrating\\_workforce.pdf](http://www.who.int/health-services-delivery/human/workforce/papers/integrating_workforce.pdf)



- O'Brien-Pallas, L., Irvine Doran, D., Murray, M., Cockerill, R., Sidani, S., Laurie-Shaw, B., & Lochhass Gerlach, J. (2001). Evaluation of a client care delivery model. Part 1: Variability in nursing utilization in community home nursing. *Nursing Economics*, 6(19), 267–276.
- O'Brien-Pallas, L., Thomson, D., Alksnis, C., & Bruce, S. (2001). The economic impact of nurse staffing decisions: Time to turn down another road? *Hospital Quarterly*, 4(3), 42–50.
- O'Brien-Pallas, L., Tomplin Murphy, G., Baumann, A., & Birch, S. (2001). Framework for analyzing health human resources (p. 6). In Canadian Institute for Health Information. Future development of information to support the management of nursing resources: Recommendations. Ottawa: CIHI.
- Ozcan, S., Taranto, Y., & Horney, P. (1995). Shaping the labor efficiency among American hospital markets. *Annals of Operations Research*, 67, 61–81.
- Roos, N., Black, C., Frohlich, N., Decoster, C., Cohen, M., Tataryn, D., Mustard, C., Toll, F., Carriere, K., Burchill, C., MacWilliam, L., & Bogdanovic, B. (1995). A population based health information system. *Medical Care*, 33(12), DS13.
- Roos, N.P., Fransoo, R., Bogdanovic, B., Carriere, K.C., Frohlich, N., Friesen, D., Patton, D., & Wall, R. (1999). Needs-based planning for generalist physicians. *Medical Care*, 37(6 Suppl), JS206–228.
- World Health Organization. (2000). *The world health report 2000. Health systems: Improving performance*. Geneva: Author.

# **The Effects of Organizational Culture on Nursing Professionalism: Implications for Health Resource Planning**

**Milisa Manojlovich and Shaké Ketefian**

Dans de nombreux hôpitaux, la pratique des soins infirmiers se heurte à la structure organisationnelle, ce qui a un effet négatif sur les résultats chez le patient. La capacité des infirmières d'exercer leur métier avec professionnalisme peut être influencée par la culture organisationnelle au sein du milieu de travail. Les qualités personnelles peuvent également jouer un rôle. Les résultats chez le patient dépendent de la possibilité de repérer des ressources de santé malgré leur rareté et d'en promouvoir l'utilisation. La présente étude se fonde sur la théorie de l'engagement personnel [personal investment theory], car cette approche permet de combiner une étude du milieu à celle des comportements individuels en rapport avec la motivation. On a entrepris une analyse des données secondaires pour déterminer si la culture organisationnelle et le sentiment de satisfaction personnelle peuvent servir à prévoir le degré de professionnalisme chez les infirmières. Une analyse de régression multiple a démontré que la culture organisationnelle explique plus de 16 % de la variance à cet égard. On constate par conséquent que le degré de professionnalisme et qu'une culture organisationnelle forte en milieu hospitalier comptent parmi les ressources susceptibles de favoriser une amélioration des résultats chez le patient.

The organizational structure of many hospitals conflicts with the practice of professional nursing, adversely affecting patient outcomes. The ability of nurses to practise in a professional manner may be influenced by the organizational culture of their work environment. Personal attributes may also play a role. Patient outcomes depend on the identification and promotion of scarce health resources. Personal investment theory was used as the conceptual foundation for this study because of its ability to blend environmental context and personal behaviours associated with motivation. Secondary data analysis was undertaken to determine whether organizational culture and personal sense of accomplishment can predict nursing professionalism. Multiple regression analysis showed that organizational culture predicted over 16% of the variance in nursing professionalism. Therefore, nursing professionalism and hospital environment featuring a strong organizational culture are two health resources that can promote improved patient outcomes.

---

*Milisa Manojlovich, RN, MS, CCRN, is a doctoral student in nursing at the University of Michigan, Ann Arbor, USA. Shaké Ketefian, RN, EdD, FAAN, is Professor and Director of International Affairs and the WHO Collaborating Center, School of Nursing, University of Michigan.*

The practice of many nurses in hospital settings is task-oriented and physician-centred (Norris, 1995). This is in contrast to the image suggested by the term “nursing professional”: an autonomous practitioner, armed with a unique body of knowledge, who practises within a specified code of conduct and derives a sense of accomplishment from his or her work. Furthermore, key among the factors that nurses value in their work environment are those associated with professional nursing practice (Aiken & Patrician, 2000). Unfortunately, in the hospital environment, which is where most nurses are employed, professional practices tend to move away from the ideal (Mohr, 1995), because hospitals, as corporations, are bureaucracies concerned with productivity, efficiency, and the achievement of social goals (Mohr). The move away from nursing professionalism adversely affects patient care and patient outcomes (Diers, 1978; Hinshaw, Smeltzer, & Atwood, 1987). Therefore, ways must be found to support nursing professionalism in the hospital environment.

Studies have shown that hospital nurses do not have the autonomy and organizational influence necessary to fulfil their professional responsibilities to patients (Penticuff & Walden, 2000). Nursing graduates must be given the role models and opportunities to use newly acquired tools, such as professional autonomy and authority, to enhance professional practice. If appropriate role models are not available, professional values acquired in school risk becoming secondary to the bureaucratic values of the employer, because, while socialization helps to internalize certain desirable traits, environmental factors also play a role in shaping behaviour. The professional orientation of the work setting influences nursing practice (Hinshaw, 1976). Therefore, while ways must be found to nurture certain personal attributes of nurses, enhanced professional practice also depends on the ability of nurses to develop the skills necessary to influence their own work environment.

Nurses are challenged to find ways to manipulate the environment in order to achieve more professional practice. There is empirical evidence to support the claim that the nursing environment has a significant impact on nursing professionalism (Ketefian, 1985). One of the many components of the practice environment is the organizational culture of the nursing unit. Organizational culture is defined as the underlying values and beliefs of an organization as perceived by its employees (Braskamp & Maehr, 1985). Understanding the culture of the work environment may be the first step in the achievement of more professional nursing practice (del Bueno & Vincent, 1986).



Thus a lack of nursing professionalism must be addressed from two perspectives: that of personal attributes, and that of organizational influences on role development. This study used personal investment theory as a conceptual model to explore the possible relationships between a selected external factor, organizational culture, and selected internal factors, personal sense of accomplishment and nursing professionalism. These concepts have not been previously viewed in this light. The intent was to establish relationships between the variables of interest in such a way as to light the path to nursing professionalism. It is hoped that nursing administrators will be able to use these concepts in developing a more professional practice for their staff.

## **Review of the Literature**

### ***Organizational Culture***

The study of organizational culture promotes understanding of organizational life and helps individuals cope with organizational conflict (del Bueno & Vincent, 1986; Thomas, Ward, Chorba, & Kumiega, 1990). The potential for conflict arises when an individual's values are incongruent with those of the group (Webb, Price, & Van Ess Coeling, 1996). One source of conflict in health-care agencies is the opposing values of the organization, usually a bureaucracy, and the health-care practitioner such as the professional nurse. Since organizational culture consists of the underlying values and beliefs of the organization as perceived by its employees, its attributes are almost as varied as the perceptions that frame it.

Workplace factors most valued by nurses include autonomy and control over the work environment, ability to initiate and sustain a therapeutic relationship with patients, and a collaborative relationship with physicians at the unit level (Aiken & Patrician, 2000). Other attributes valued by nurses are adequate staffing levels, flexible scheduling, strong supportive and visible nursing leadership, recognition of excellence in practice, and opportunities for professional development (Aiken & Patrician). The organizational culture of magnet hospitals, so called because they are magnets for the recruitment and retention of nurses despite shortages in their local labour markets (Aiken, 1990), features these attributes (Kramer & Schmalenberg, 1993). Magnet hospitals have also been found to have lower mortality rates than matched controls (Aiken & Patrician).

McDaniel and Stumpf (1993) used an established tool, the Organizational Culture Inventory, to measure the relationships between

organizational culture and certain features of nursing service. The increasing popularity of such a tool can be attributed in part to the Joint Commission on Accreditation of Health Care Organizations, which now recognizes organizational culture as important to the provision of high-quality patient care (Thomas et al., 1990). McDaniel and Stumpf found leadership, work satisfaction, retention, recommending the organization as a good place to work, job knowledge, work support, and "fitting in" to be positively related to culture. Based on these results, they recommend that greater emphasis be placed on professional dimensions of work, such as critical thinking skills and professional growth, in order to develop a stronger, more positive organizational culture. They cite other research evidence of a relationship between positive culture and decreased mortality among acute-care patients. These findings should give nursing administrators and their staff the impetus to foster a positive culture.

An organization may have various subcultures that shape the values, beliefs, and perceptions of its departments, specialized groups, and professional disciplines (Jones, DeBaca, & Yarbrough, 1997). In a study where patient-focused care was implemented throughout a large health-care organization, Jones et al. found significant identification with and assessment of subcultures. Therefore, although the hospital as a whole has a specific organizational culture, so does each of its nursing units. Also, the various health-care professionals who practise in a hospital have their own culture. Suominen, Kovasin, and Ketola (1997) point out that nursing culture is characterized by a common language, common rules and rituals, and common dress. Webb et al. (1996) examined subcultures within a large organizational culture to study nurses' views of authority and responsibility. They concluded that how nurses value authority and responsibility affects how they accept responsibility for decision-making, a concept deemed central to professional nursing practice. Their findings suggest that nurses value direct communication and authority. However, work-group cultures differed according to their patterns of practice. The authors concluded that organizational changes must be planned with individual work-group cultures in mind, and that conflict can arise when the values of an individual are not congruent with those of management or the work group. Thus it would seem that both individual work-group culture and organizational culture can affect professional practice. Their relative impact represents an interesting area for future research.

In contrast, Adams, Bond, and Hale (1998) studied the effects of organizational structure on nursing practice and found no difference between organizational structure and nurses' perceptions of profes-

sional practice. These findings were independent of different authority and responsibility relationships. It may be impossible to infer reasons for the differences in these findings because of the vast dissimilarities in the instruments used to measure the constructs. Thus organizational culture may affect nursing professionalism at many levels. While the literature shows that nursing professionalism may be supported in a variety of cultures, a firm understanding of and personal congruence with each particular culture is essential (del Bueno & Vincent, 1986).

### *Personal Sense of Accomplishment*

The link between accomplishment and nursing professionalism has not been investigated. However, Braskamp and Maehr (1985) found that employees who perceive their organization as supporting them by placing an emphasis on excellence in its products and services have a greater sense of accomplishment. According to Braskamp and Mehr, accomplishment is one of the four core personal incentives for motivation. Personal incentives form the bedrock of personal investment theory, the conceptual framework for this study. A theme running through personal investment theory is that the degree to which one invests time and energy in a task or occupation is determined by one's motivation. Individuals who pursue excellence in the workplace may be described as motivated and devoted to their work. Devotion to work is a professional value that the Hall/Snizek Professionalism Scale calls "sense of calling to the field" (Snizek, 1972, p. 110). Therefore, conceptually at least, a connection appears to exist between professionalism and personal sense of accomplishment.

### *Nursing Professionalism*

Professionalism in nursing is instilled through a process of socialization initiated in formal nursing education (Hinshaw, 1976). The values and beliefs associated with what it means to be a nurse are either further developed or abandoned after the commencement of employment (Kramer, 1974). New nurses face many stressors on the job. Hinshaw et al. (1987) found that job stresses encountered by hospital nurses included "continual attempts to resolve conflicting values between professional and bureaucratic demands" (p. 10).

Autonomy is one of five theoretical dimensions of professionalism identified by Snizek (1972) and widely held by many occupations, nursing among them, as central to professionalism. Alexander, Weisman, and Chase (1982) studied the determinants of staff nurses'

perceptions of autonomy across multiple clinical units. They found that autonomy was influenced by the personal characteristics of the nurse as well as the structural characteristics of the unit. Other researchers have also found empirical evidence of links among professionalism, autonomy, and practice environment (Melhuish, Maguire, Nolan, & Grant, 1993; Schutzenhofer & Bridgman Musser, 1994).

McCloskey (1990) studied the opinions of newly employed nurses at two points in time to determine which job concepts were central to their job satisfaction. At both 6 and 12 months, autonomy and social integration were found to be significant factors. Nurses with high degrees of both autonomy and social integration were more likely to exhibit greater work motivation and greater commitment to the organization. Blegen and Mueller (1987) report similar findings from their longitudinal study of nurses' job satisfaction with a much larger sample ( $n = 370$ ). Therefore, the results of both studies hint at a connection between the socialization process necessary to achieve social integration and the dimensions of motivation and autonomy

### **Theoretical Framework**

The theoretical framework for this study was Maehr and Braskamp's (1986) personal investment theory. This theory has not been used previously in nursing research, although some of its constructs have been linked to fitness-related behaviour (Gray-Lee & Granzin, 1997). Personal investment consists of the behavioural patterns associated with motivation (Maehr & Braskamp). People who are motivated invest more of themselves in a job, task, or activity. Personal investment theory is founded on the personal incentives of accomplishment, recognition, power, and affiliation — "the values and personal goals which guide and direct what people choose to do and the degree to which they will invest themselves in any activity" (Braskamp & Maehr, 1985, p. 3).

Organizational culture is one of the environmental factors crucial to motivation and personal investment. Maehr and Braskamp (1986) suggest that a strong organizational culture influences personal investment. They found that organizational values matched the personal incentives of individuals. All personal incentives are determined by past experiences as well as the current living and working situation (Braskamp & Maehr, 1985). While past experiences cannot be altered, the current work situation can be manipulated to improve motivation and inspire greater personal investment.

At the core of personal investment theory, however, is the concept of personal context. Two people in an identical situation can have very different perceptions of it. Although personal investment is affected by myriad external factors, every single one of these is filtered through the perceptions of the individual. All factors are "mediated by the meanings these events hold for the individual involved" (Maehr & Braskamp, 1986, p. 47); therefore, "people exhibit different patterns of personal investment because they understand the investment situation differently" (p. 48). The wide variety of expressions of personal investment has implications for every manager who has ever wondered how to motivate a poorly performing employee. According to personal investment theory, it is not enough to make organizational changes in order to improve motivation. Unless they have meaning for the people involved, organizational changes will not be effective.

In summary, personal investment theory was developed from the finding that motivation emerges from a combination of internal and external factors, both of which are crucial to its expression. Also, personal investment has identifiable outcomes that have implications for nursing. Achievement is conceptually defined as an active outcome involving the accomplishment of something deemed valuable to society but whose results are not known ahead of time (Maehr & Braskamp, 1986). It could be argued, based on the literature, that professional nursing behaviours such as engaging in client education and advocacy or those associated with the nursing process are more valuable to society than non-professional nursing behaviours such as inserting catheters or administering medications. Personal investment theory may provide further support for this point of view. Although the concept of professionalism is not part of Maehr and Braskamp's theory, achievement as an outcome of personal investment may be one indicator of nursing professionalism. In addition, the personal sense of accomplishment one derives from one's chosen field is part of the "sense of calling to the field" described by Snizek (1972) as a theoretical dimension of professionalism.

Thus personal investment theory provides the conceptual basis for linking key concepts of interest in this study. Personal sense of accomplishment, which is necessary to motivation and achievement, is influenced by the organizational culture (one facet of the environment) that is the setting for the behaviour. The hospital itself features the same four incentives of accomplishment, recognition, power, and affiliation. Nursing behaviour may therefore be affected by the practice environment, and a nurse's personal sense of accomplishment may be an indicator of the degree to which personal values are congruent with



institutional values. "If an institution is not clear about what it values, then decisions are likely to be guided by individual values and may result in incongruencies between the employees and the institution's leaders" (Rushton, 1995, p. 391). Further, since one infuses the action with greater or lesser personal investment, depending on the meaning of that action, it is in the nurse's and the hospital's best interest to invest as much meaning as possible into activities. The greater the personal investment, the better the outcome, for nurses, hospitals, and the people they serve.

### Research Questions

The overall question for this study was: What is the relationship of organizational culture and one's personal sense of accomplishment to nursing professionalism? The specific research questions addressed by this study were: *Is there a significant relationship between the organizational culture of a hospital and nursing professionalism? Is there a significant relationship between a nurse's personal sense of accomplishment and nursing professionalism? Do organizational culture and sense of accomplishment together predict greater variance in nursing professionalism?*

### Method

#### *Design and Sample*

This study involved secondary analysis of data collected for a larger study, the Michigan Nursing Role Professionalization (MNRP) project, which investigated organizational changes at a major university-affiliated hospital in the midwestern United States. The MNRP project used a longitudinal research design and generated a total of three waves of data, collected in 1991, 1994, and 1996. Only the third data set was used in this study, as the organizational changes were not complete until 1996, the year the data in this set were collected. The organizational changes, introduced sequentially, involved work redesign (including the introduction of unlicensed assistive personnel) and the institution of professional practice models. Nursing units were encouraged to implement their own professional practice models rather than subscribe to a hospital-wide model.

Approval from the institution's Human Subjects Review Committee was obtained by the original investigators. Permission was obtained from the appropriate authorities to access nurses from all 23 units of the hospital. A packet was sent to eligible nurses through the internal mailing system. It contained the study instruments; a letter

informing the nurses that participation was voluntary, that data were to be reported in group form, and that individuals would not be identified at any point; and consent forms to be signed and returned by each nurse separately, again ensuring confidentiality of all responses. A follow-up letter was sent 4 to 6 weeks later to improve the response rate.

A convenience sample representing a cross-section of registered nurses, including nurse managers and clinical nurse specialists, from all 23 units was recruited: 52.8% of respondents had a baccalaureate degree, 23.4% either an associate degree or a diploma, and 17.9% a master's degree or higher; mean age was 41.09 years with a range of 24–61 years; years of professional experience ranged from 0.5 to 40 with a mean of 16.19. All nurses had been employed at the hospital for at least 6 months. Full-time (58.7%) and regular part-time (36.3%) nurses across all three shifts were included in the study. Nurses reporting to multiple units and temporary employees were excluded.

Because the original study involved comparison at three points in time, nurses were asked to provide their social security numbers (known only to themselves), so that individual responses could be matched across data sets (only nurses who had participated in the first wave were invited to participate in the second and third waves). Of the 1,748 packets distributed in 1996, 424 useable packets were returned, for a response rate of 24.3%.

### *Instruments*

***Nurse Assessment Survey.*** The Nurse Assessment Survey (NAS) was used to measure both organizational culture and personal sense of accomplishment. The NAS was developed by Maehr and Braskamp (1986) using personal investment theory as its foundation. The instrument consists of 91 items and 11 scales presented in a five-point Likert design. The scales were designed to collect meaningful information on nurses' perceptions, attitudes, and culture within a hospital setting. These items and scales are contained in three measures: organizational culture, job satisfaction, and retention scale. The first measure, organizational culture, consists of five subscales: accomplishment, affiliation, power, recognition, and strength of culture. These subscales focus on the underlying values of the organization as perceived by its employees. They do not assess structural elements or group behaviour (Braskamp & Maehr, 1985). The second measure, job satisfaction, consists of subscales for accomplishment, recognition, power, and affiliation. These subscales do not assess job satisfaction directly, although

**Table 1** *Examples of Items in Each of the NAS Subscales Used in the Study*

NAS Subscale	Representative Items
Organizational culture: accomplishment	<p>This hospital stresses excellence and “doing it right.”</p> <p>Employees are afraid to make a mistake.</p> <p>Around here, we’re encouraged to try new things.</p>
Organizational culture: affiliation	<p>I do my best work here because my co-workers urge me to do so.</p> <p>In this hospital, there is respect for each individual worker.</p> <p>Employees here don’t really trust one another.</p>
Organizational culture: power	<p>Power and influence count a lot around here.</p> <p>Competition among different work groups in this hospital is actively encouraged.</p>
Organizational culture: recognition	<p>Employees here receive a lot of attention.</p> <p>This hospital makes me feel like I’m an important, productive person.</p> <p>I regularly receive information about the quality of my work.</p>
Organizational culture: strength of culture	<p>Everybody in this hospital knows what it stands for.</p> <p>This hospital is clear about what it expects from me as an employee.</p> <p>Everyone in this hospital knows what is valued most.</p>
Job satisfaction: accomplishment	<p>I have opportunities to work on challenging tasks.</p> <p>I have opportunities to feel proud about my work.</p> <p>I have opportunities to improve my skills and talents.</p>



employees have been found to express a higher degree of job satisfaction when perceived opportunities match the importance they place on them (Maehr & Braskamp). The third measure, retention, is a personal-incentive index and consists of subscales for job satisfaction and organizational commitment (Tzeng, 1997). For this study, data collected from all five subscales of the first measure were used to measure organizational culture. The accomplishment subscale of the second measure was used to measure job satisfaction, because this subscale measures the degree to which personal sense of accomplishment can be fulfilled by options or opportunities in the individual's present job (Braskamp & Maehr). Representative items from each subscale of the first and second measures are presented in Table 1.

Although two of the subscales contain the word "accomplishment," they refer to different constructs. The accomplishment subscale of organizational culture measures the extent to which employees feel the organization focuses on excellence and quality (Braskamp & Maehr, 1985). The accomplishment subscale of job satisfaction measures the degree to which employees feel they have the time to pursue excellence in their work. Thus one subscale examines accomplishment at the organizational level, the other at the personal level.

According to the literature, the reliability of the five organizational culture subscales measured by Cronbach's alpha is as follows: accomplishment (0.80; 9 items), affiliation (0.85; 9 items), power (0.51; 5 items), recognition (0.87; 9 items), and strength of culture (0.82; 7 items); while reliability of the job satisfaction accomplishment subscale is 0.88 (10 items). Although factor analysis was used to determine the number of items in each of the personal-incentive subscales, no attempt was made to factor analyze items for the job opportunity or culture subscales (Braskamp & Maehr, 1985).

**Hall/Snizek Professionalism Scale.** Nursing professionalism was measured using a scale developed by Hall in 1968 and modified by Snizek (1972). It is an attitude scale consisting of 25 items designed to measure professionalism among members of various occupational groups. The five attitudes towards professionalism and their reliability coefficients are: use of a professional organization as a major referent (0.621), belief in public service (0.640), belief in self-regulation (0.699), sense of calling to the field (0.583), and feeling of autonomy (0.738). The reliability coefficient across all five dimensions of professionalism as reported by Snizek is 0.78. All reliability coefficients were computed using Kuder-Richardson Formula 20 (Snizek). Table 2 summarizes operational definitions for all variables of interest.

**Table 2** *Summary of Operational Definitions*

Variable of Interest	Measure
<b>Independent variables</b>	
Organizational culture	Entire organizational culture measure of Nurse Assessment Survey (NAS), consisting of five subscales: accomplishment, affiliation, power, recognition, strength of culture
Personal sense of accomplishment	One subscale of the job satisfaction measure of NAS: accomplishment
<b>Dependent variable: nursing professionalism</b>	
Professionalism	Hall/Snizek Professionalism Scale

## Results

A correlation matrix was generated to reveal the strength of the relationship between each of the dependent and independent variables (Table 3). Simple bivariate and multiple linear regression procedures were used to test the research questions. Hierarchical regression was not performed, as theory did not inform the order of the variables. The five organizational culture subscales were independent variables in the first regression equation. The accomplishment subscale of the NAS job satisfaction scale was the only independent variable in the second equation. Both sets of independent variables were entered into the third and final regression equation. Results of these analyses are summarized in Table 4.

As can be seen, strength of organizational culture was the only significant predictor of nursing professionalism. Accomplishment was the only other subscale to approach significance. Since it was theorized that personal sense of accomplishment affects nursing professionalism, the power subscale was removed and the analysis rerun, in an effort to improve the significance of the remaining subscales, particularly accomplishment. However, no appreciable change in significance was obtained, so these results are not included in this discussion.

The overall  $R^2$  of 0.163 indicated that slightly over 16% of the variance in nursing professionalism could be explained by organizational

**Table 3** *Correlation Coefficients Between Study Variables, N = 403<sup>1</sup>*

Variable	1	2	3	4	5	6	7
1 Nursing professionalism	—						
2 Organizational culture: recognition	0.339*	—					
3 Organizational culture: power	-0.021	-0.006	—				
4 Organizational culture: affiliation	0.351*	0.813*	-0.14**	—			
5 Organizational culture: accomplishment	0.347*	0.688*	-0.114	0.744*	—		
6 Strength of culture	0.358*	0.607*	-0.085	0.653*	0.582*	—	
7 Job satisfaction: accomplishment	0.245*	0.556*	-0.134**	0.539*	0.441*	0.447*	—

<sup>1</sup> N of 403 represents complete data only for variables entered into correlation matrix.  
 \* = significant at 0.000 level  
 \*\* = significant at 0.01 level

**Table 4** *Summary of Regression Analyses for Variables Predicting Nursing Professionalism*

Variable	Beta	R <sup>2</sup>	F	p
Organizational culture		0.163	15.473	0.000
strength of culture	0.188			0.003
recognition	0.075			0.366
power	0.018			0.700
affiliation	0.07			0.454
accomplishment	0.133			0.065
Job satisfaction: accomplishment	0.245	0.06	25.555	0.000
Organizational culture and job satisfaction: accomplishment		0.164	12.953	0.000
strength of culture	0.184			0.004
recognition	0.062			0.472
power	0.022			0.639
affiliation	0.064			0.494
accomplishment	0.133			0.066
job satisfaction: accomplishment	0.038			0.499

culture. When the third research question was tested using multiple regression analysis, personal sense of accomplishment did not even approach significance ( $p = 0.499$ ). The  $R^2$  of 0.164 did not increase appreciably from the first regression model. Thus the contribution of personal sense of accomplishment to nursing professionalism, small on its own, becomes insignificant when the strength of the organizational culture is entered into the equation, leaving only strength of culture as a significant predictor of nursing professionalism.

For the bulk of the analyses, all five dimensions were examined simultaneously in one professionalism scale. However, interesting results were obtained when individual subscales were entered separately into regression equations with organizational culture subscales. Belief in service, belief in self-regulation, and sense of calling were all significantly dependent on various organizational subscales ( $p < 0.05$ ). In fact, 24.5% of the variance in sense of calling was explained by organizational culture. These results are summarized in Table 5.

## **Discussion**

The most substantial finding of this study is that of organizational culture as a significant predictor of nursing professionalism. Although this finding is not surprising or novel, its re-emergence here serves to underscore its importance. Furthermore, the finding that a single variable explains a little over 16% of the variance in nursing professionalism is itself impressive. There is a powerful link between organizational culture and professional nursing practice. The fact that organizational culture affects nursing practice has been empirically shown elsewhere. Research has established positive links among culture, the morale and retention of employees, and decreased patient mortality (McDaniel & Stumpf, 1993). Environmental factors have also been shown to affect professional practice (Aiken & Patrician, 2000). Yet the ability to evaluate or understand the success or failure of organizational reforms remains largely unstudied (Aiken & Patrician). Thus more emphasis should be placed on the environment in which nursing is practised. This study makes a contribution in this regard and also makes a modest contribution to the empirical research in this area.

Organizational frameworks that support professionalism provide nurses with increased opportunities for autonomy and accountability, give nurses control over the patient-care environment, and foster nurse-physician collaboration (Aiken & Patrician, 2000). These are also characteristics of magnet hospitals. The American Nurses Credentialing Center, a major national certification organization, established the

**Table 5** *Summary of Regression Analyses for Variables Predicting Belief in Service, Belief in Self-Regulation, and Sense of Calling*

Dependent Variable	Independent Variable	Beta	R <sup>2</sup>	F	p
Belief in service	Organizational culture and job satisfaction: accomplishment		0.05	3.434	0.003
	strength of culture	0.164			0.016
	recognition	-0.202			0.028
	power	0.022			0.670
	affiliation	0.092			0.353
	accomplishment	0.132			0.087
Belief in self-regulation	Organizational culture and job satisfaction: accomplishment		0.16	12.408	0.000
	strength of culture	0.149			0.021
	recognition	-0.165			0.060
	power	-0.011			0.817
	affiliation	0.157			0.098
	accomplishment	0.192			0.008
Sense of calling	Organizational culture and job satisfaction: accomplishment		0.245	21.367	0.000
	strength of culture	0.295			0.000
	recognition	-0.150			0.068
	power	0.082			0.072
	affiliation	0.150			0.091
	accomplishment	0.162			0.019

magnet hospital program as a mechanism for recognizing nursing excellence (Bednash, 2000). The fact that hospitals aspire to magnet hospital status suggests that they recognize the importance of providing an environment in which professional nursing practice can thrive. By developing the characteristics of magnet hospitals, other hospitals may be able to reap the rewards of a more professional nursing staff.

The conceptual framework used for this study is not supported by the results. Personal sense of accomplishment was not found to be related in a meaningful way to nursing professionalism. Personal investment theory, so appealing in principle, did not gain empirical credence. Although it is interesting to speculate that personal incentives other than accomplishment may provide stronger links to nursing

professionalism, the data contained no clues to support this notion. For example, using the professional organization as a major referent is a theoretical dimension of professionalism, according to Snizek (1972). The attribute of affiliation would certainly tap into this dimension. Of the five professionalism subscales, however, it was sense of calling, which is not identified as a personal incentive by the theory, that related most significantly to the organizational culture subscales.

The lack of a proven relationship between organizational culture and personal sense of accomplishment may be due to organizational changes at the medical centre where the data were collected. Multiple organizational modifications had been made prior to data collection, and it may be that the instruments were not sufficiently sensitive to discern nuances in the changed environment. Furthermore, personal sense of accomplishment may have been overwhelmed or obscured by the massive organizational changes.

### *Implications for Nursing*

While there is no simple prescription for achieving the "ideal" nursing culture, nursing administrators armed with valid and reliable assessments of the existing culture can identify key targets and strategies for organizational change (Thomas et al., 1990, p. 24). A thorough understanding of their organization's culture is a powerful addition to administrators' set of tools, because "an awareness of the underlying forces can help them understand personnel behaviour, identify organizational changes, and help the organization to function more efficiently" (Thomas et al., p. 24). McDaniel and Stumpf (1993) conclude that "the management of an organization or unit can influence, and thereby enhance, employees' culture" (p. 59). Although the present study did not examine cultural assessments, it did demonstrate that the only statistically significant measure of an organization's culture is its strength.

It may be that "the only way nurses can increase their power and influence is to increase their special expertise in the area of nursing intervention" (Kubsch, 1996, p. 199). Furthermore, it can be argued that this "special expertise," which is one attribute of professionalism, flourishes best in a specific organizational culture. Some organizational cultures may be more amenable to nursing professionalism than others. However, the culture of an environment, in this case a hospital environment, is only one part of an organization's framework. Hierarchy, rules and regulations, and interpersonal networks are some of the other factors that affect its outcomes and the behaviour of its employees. While studies such as the present one highlight the importance of



attending to organizational culture for its effects on nursing professionalism, and by extension patient outcomes, they only touch the tip of the proverbial iceberg as far as organizational research is concerned.

Because the arena of health care is an ever-changing one, those involved in health resource planning should not lose sight of the importance of patient outcomes. Despite cyclical nursing shortages and ongoing financial constraints, the basic question should always be: How will this affect patient care? A focus on organizational culture and professional nursing practice need not have an adverse effect on patient outcomes. More research is needed in this area, but the results of the present study indicate that two resources are essential to health care: professional nursing staff and a strong organizational culture.

### *Limitations*

Use of the NAS instrument may have been a limitation of this study. Spectrum, from which NAS was adapted, was designed as a development tool for organizational assessment (Braskamp & Maehr, 1985). The organizational culture measure of NAS used in this study was applied as an indicator of the presence or absence of the five organizational culture variables. Inappropriate use of an indicator, as opposed to an assessment tool, may have adversely affected the outcomes. Instrumentation more congruent with the concepts under investigation might have revealed more promising results. Another limitation concerns the use of the job opportunity subscale to measure personal sense of accomplishment. Although the subscale was reliable ( $\alpha$  0.88), its validity was not assessed. Hence, the instrument used may not have measured the concept of interest.

### **Conclusions**

This study, the first to examine the effects of organizational culture and personal sense of accomplishment on nursing professionalism, found organizational culture to be a significant and substantial predictor of nursing professionalism. It adds a small but essential piece to the puzzle of how to maintain professionalism in nursing practice.

Further examination of these constructs can have a significant theoretical impact on the discipline of nursing. Research to more clearly delineate the role of the work environment and elucidate its impact on practice is crucial to the future configuration of nursing. Resources for health care are not infinite, as evidenced by the dwindling supply of nurses. However, by striving for nursing professionalism and provid-

ing a strong organizational culture, we can use the resources that are available to promote positive health-care outcomes.

## References

- Adams, A., Bond, S., & Hale, C.A. (1998). Nursing organizational practice and its relationship with other features of ward organization and job satisfaction. *Journal of Advanced Nursing*, 27, 1212–1222.
- Aiken, L.H. (1990). Charting the future of hospital nursing. *Image: Journal of Nursing Scholarship*, 22(2), 72–78.
- Aiken, L.H., & Patrician, P.A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nursing Research*, 49(3), 146–153.
- Alexander, C.S., Weisman, C.S., & Chase, G.A. (1982). Determinants of staff nurses' perceptions of autonomy within different clinical contexts. *Nursing Research*, 31(1), 48–52.
- Bednash, G. (2000). The decreasing supply of registered nurses: Inevitable future or call to action? *Journal of the American Medical Association*, 283(22), 2985–2987.
- Blegen, M.A., & Mueller, C.W. (1987). Nurses' job satisfaction: A longitudinal analysis. *Research in Nursing and Health*, 10, 227–237.
- Braskamp, L.A., & Maehr, M.L. (1985). *Spectrum: An organizational development tool* [Manual]. Champaign, IL: Metritech, Inc.
- Del Bueno, D.J., & Vincent, P.M. (1986). Organizational culture: How important is it? *Journal of Nursing Administration*, 16(10), 15–20.
- Diers, D. (1978). A different kind of energy: Nurse-power. *Nursing Outlook*, (January), 51–58.
- Gray-Lee, J.W., & Granzin, K.L. (1997). Understanding participation in exercise and sport: An extended application of PIT. *Journal of Sport Behaviour*, 20(1), 37–53.
- Hinshaw, A.S. (1976). *Socialization and resocialization of nurses for professional nursing practice* (paper presented at conference of the Council of Baccalaureate and Higher Degree Programs). Publication #15-1659. Philadelphia: National League for Nursing.
- Hinshaw, A.S., Smeltzer, C.H., & Atwood, J.R. (1987). Innovative retention strategies for nursing staff. *Journal of Nursing Administration*, 17(6), 8–16.
- Jones, K.R., DeBaca, V., & Yarbrough, M. (1997). Organizational culture assessment before and after implementing patient-focused care. *Nursing Economics*, 15(2), 73–80.
- Ketefian, S. (1985). Professional and bureaucratic role conceptions and moral behavior among nurses. *Nursing Research*, 34(4), 248–253.
- Kramer, M. (1974). *Reality shock: Why nurses leave nursing*. St. Louis: Mosby.
- Kramer, M., & Schmalenberg, C. (1993). Learning from success: Autonomy and empowerment. *Nursing Management*, 24(5), 58–64.



- Kubsch, S.M. (1996). Conflict, enactment, empowerment: Conditions of independent therapeutic nursing intervention. *Journal of Advanced Nursing*, 23, 192–200.
- Maehr, M.L., & Braskamp, L.A. (1986). *The motivation factor: A theory of personal investment*. Lexington, MA: Lexington Books.
- McCloskey, J.C. (1990). Two requirements for job contentment: Autonomy and social integration. *Image: Journal of Nursing Scholarship*, 22(3), 140–143.
- McDaniel, C., & Stumpf, L. (1993). The organizational culture: Implications for nursing service. *Journal of Nursing Administration*, 23(4), 54–60.
- Melhuish, E., Maguire, B., Nolan, M., & Grant, G. (1993). The professional role of the nurse. *British Journal of Nursing*, 2(6), 330–335.
- Mohr, W.K. (1995). Values, ideologies, and dilemmas: Professional and occupational contradictions. *Journal of Psychosocial Nursing*, 33(1), 29–34.
- Norris, E. (1995). Achieving professional autonomy for nursing. *Professional Nurse*, 11(1), 59–61.
- Penticuff, J.H., & Walden, M. (2000). Influence of practice environment and nurse characteristics on perinatal nurses' responses to ethical dilemmas. *Nursing Research*, 49(2), 64–72.
- Rushton, C.H. (1995). Creating an ethical practice environment: A focus on advocacy. *Critical Care Nursing Clinics of North America*, 7(2), 387–397.
- Schutzenhofer, K.K., & Bridgman Musser, D. (1994). Nurse characteristics and professional autonomy. *Image: Journal of Nursing Scholarship*, 26(3), 201–205.
- Snizek, W.E. (1972). Hall's Professionalism Scale: An empirical reassessment. *American Sociological Review*, 37(1), 109–114.
- Suominen, T., Kovasin, M., & Ketola, O. (1997). Nursing culture — some viewpoints. *Journal of Advanced Nursing*, 25, 186–190.
- Thomas, C., Ward, M., Chorba, C., & Kumiega, A. (1990). Measuring and interpreting organizational culture. *Journal of Nursing Administration*, 20(6), 17–24.
- Tzeng, H.-M. (1997). *The influence of staff nurses' perceptions of organizational culture on inpatient satisfaction with nursing care*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.
- Webb, S., Price, S., & Van Ess Coeling, H. (1996). Valuing authority/responsibility relationships: The essence of professional practice. *Journal of Nursing Administration*, 26(2), 28–33.

### Authors' Note

The data used in this analysis are the property of the Michigan Nursing Role Professionalization (MNRP) project.

The authors acknowledge and are grateful for the support of the research team. The team comprised: Richard W. Redman, PhD, RN; Shaké Ketefian, RN, EdD, FAAN; Beverly Jones, RN, MPH, FAAN;

Debra Finch, PhD, RN; Sheri Dufek, MSA, RN; Joan Robinson, MS, RN; and Carol Spengler, PhD, FAAN. We wish to further thank Dr. Redman for his assistance in helping us locate other studies using the MNRP data set.

# A Hospital-Level Analysis of the Work Environment and Workforce Health Indicators for Registered Nurses in Ontario's Acute-Care Hospitals

Judith Shamian, Michael Steven Kerr,  
Heather K. Spence Laschinger, and Donna Thomson

Cette étude avait pour but d'explorer le rapport entre les indicateurs relatifs à l'environnement de travail en milieu hospitalier et les indicateurs regroupés de la santé et du bien-être pour les infirmières autorisées travaillant dans les hôpitaux de soins actifs en Ontario, au Canada. L'analyse de type écologique portait sur des données recueillies à partir d'un instrument d'auto-évaluation distribué aléatoirement en fonction d'un échantillonnage stratifié. On a eu recours à des modèles de régression linéaire multivariés pour étudier des facteurs comme l'épuisement professionnel, les douleurs musculo-squelettiques, l'évaluation personnelle de l'état de santé et l'absence en raison d'une maladie. L'unité d'analyse était l'hôpital ( $n = 160$ ) et les réponses des infirmières ont été regroupées pour chacun des hôpitaux. Après avoir tenu compte des différences fondamentales entre les corps infirmiers, notamment l'âge moyen et le niveau d'éducation, on a constaté que des scores élevés (meilleurs) en ce qui a trait à l'environnement de travail correspondaient généralement à des scores élevés en ce qui a trait aux indicateurs de santé; par ailleurs, on a établi que le travail à temps plein correspondait, dans une plus grande proportion que le travail à temps partiel, à des indices de santé peu élevés (faibles). Compte tenu de la pénurie actuelle en matière de main d'œuvre, ces résultats pourraient éclairer les décideurs dans la tâche de recruter des infirmières et de maintenir les effectifs.

The purpose of this study was to explore the relationship between hospital-level indicators of the work environment and aggregated indicators of health and well-being amongst registered nurses working in acute-care hospitals in Ontario, Canada. This ecological analysis used data from a self-reported survey instrument randomly allocated to nurses using a stratified sampling approach. Multivariable linear regression models were

---

*Judith Shamian, RN, PhD, is Executive Director, Office of Nursing Policy, Health Policy and Communications Branch, Health Canada, Ottawa, and Professor, Faculty of Nursing, University of Toronto, Ontario, Canada. Michael Steven Kerr, PhD, is Assistant Professor, School of Nursing, Faculty of Health Sciences, University of Western Ontario, London, Canada, and Scientist, Institute for Work and Health, Toronto. Heather K. Spence Laschinger, RN, PhD, is Professor and Assistant Director, Nursing Research, and Assistant Dean, Interdisciplinary Studies, Faculty of Health Sciences, University of Western Ontario. Donna Thomson, RN, MBA, is a doctoral student in the Faculty of Nursing, University of Toronto.*

used to examine hospital-level associations for burnout, musculoskeletal pain, self-rated general health, and absence due to illness. The unit of analysis was the hospital ( $n = 160$ ), with individual nurse responses ( $n = 6,609$ ) aggregated within hospitals. After controlling for basic differences in nurse workforces, including mean age and education, higher (better) work-environment scores were found to be generally associated with higher health-indicator scores, while a larger proportion of full-time than part-time nurses was found to be associated with lower (poorer) health scores. This study may provide direction for policy-makers in coping with the recruitment and retention of nursing staff in light of the current nursing shortage.

## **Introduction**

During the 1990s the Canadian health-care system underwent major reform (Decter, 1997; Shamian & Lightstone, 1997). The main elements of the reform were downsizing of inpatient capacity in the hospital sector, reduced funding of the health-care system, and regionalization in nine of the 10 provinces (Ontario being the exception) and the three territories. Many hospitals underwent significant budget reductions.

Nurses experienced lay-offs in unprecedented numbers. Many nursing departments were dismantled and their nursing leaders absorbed into general health-services administration. The lay-offs eliminated most of the junior nursing positions in the hospital system. Most Canadian health-care organizations are unionized, thus the lay-offs were carried out according to seniority, with junior nurses usually being the first to be laid off. Many of the staff nurses who remained in the system were moved between units and between sites. These changes have resulted in an older (44 years of age on average) and highly dissatisfied nursing workforce (Burke & Greenglass, 2000). Many younger nurses have either left the country in search of full-time employment, joined the casual workforce (often working for more than one employer), or found non-nursing jobs.

In 1997 nurses had the highest prevalence of illness and days lost amongst all groups of workers in Canada, both within and outside of the health-care industry. Analysis of Canadian Labor Force Survey (Akyeampong & Usalcas, 1998) 1997 data indicates that nurses were more likely than members of any other occupation to suffer illness and disability (Canadian Institute for Health Information [CIHI], 2000). The data also suggest that although the prevalence of illness is declining amongst most groups of employees, it is continuing to rise amongst nurses.

This paper reports on the findings of an investigation into the relationship between the work environment and the health profile of nurses in 160 acute-care hospitals in Ontario. The analysis is based on data

obtained from the Ontario site of a large international study comprising Canada (Alberta, British Columbia, and Ontario), England, Scotland, Germany, and the United States. The aim of the international study was to examine the relationship, at the hospital level, between nurse and organizational characteristics, staffing, and patient outcomes while adjusting for case mix (Aiken et al., 2001).

The Ontario survey included the core survey of the international study and several additional measures not used in the four other countries or the two other Canadian sites (British Columbia and Alberta). The additional measures concerned the health profile of nurses.

Aiken et al. (2001) suggest that the management of hospital staffs is fraught with problems that need to be resolved in order to ensure an adequate nursing workforce in the future. Furthermore, in all but one of the five countries studied (Germany being the exception), 30–40% of nurses reported dissatisfaction with their current position — double the job-dissatisfaction rates typically found amongst other groups (National Opinion Research Center, 2000).

It is therefore important that we examine the possible relationship between work-environment factors and health indicators amongst workers, including nurses. Such analyses could generate useful insights into nursing practice for policy-makers, health-care executives, and nurses, in order to address the prevalence of illness and disability amongst nurses. If this phenomenon is left unchecked, its effects could go beyond the health of nurses, to the quality of nursing care and, ultimately, the health of patients.

## **Methodology**

The focus of the international study was registered nurses working in acute-care hospitals in five countries, including three Canadian provinces (Aiken et al., 2001). In this paper we report on the findings regarding the work environment and the health of RNs working in acute-care hospitals in the province of Ontario.

### ***Sample***

Information was collected on a stratified random sample of subjects obtained from the 1998 College of Nurses of Ontario database. The focus of the main study was RNs working in acute-care hospitals. Thus nurses working in long-term-care facilities, specialty hospitals, private hospitals, and in the community were excluded. (Private hospitals were

not included in the study. These facilities do not provide typical acute-care services within the single-payer, government-funded health-care Canadian system.) A (stratified) random sample of up to 100 staff RNs was selected from each acute-care hospital in Ontario; when the staff comprised fewer than 100 RNs, all nurses were sampled. Administrators, consultants, nurse practitioners, and clinical specialists were excluded, as their perspective on issues was perceived as different from that of staff nurses, which is the focus of this paper.

A total of 11,179 nurses were selected. A survey and informed consent form were mailed to their home address. One week later, a reminder card was mailed. After 4 weeks, a new survey was mailed to those who had not yet responded. One week later, a further reminder card was mailed.

The overall response rate was 59% (6,609/11,179). The initial mailing of the survey represented 179 hospital sites. Hospitals with fewer than 10 nurses responding to the survey were excluded from the analysis because of the likelihood of instability in their hospital-level scores. Thus 160 hospitals (6,188 nurses) are represented in the analysis. A total of 19 primarily small hospitals were not included. Distribution of the participating hospitals by type (as designated by the Ontario Ministry of Health and Long-Term Care) was as follows: community hospitals,  $N = 95$  (59.4%); small hospitals,  $N = 49$  (30.6%); teaching hospitals,  $N = 16$  (10.0%).

### *Measures*

The core questionnaire used in the international study addressed several key domains: employment characteristics; nurses' work environment; nurse satisfaction; quality of nursing care; activities during last shift; and nurse demographics. Key measurement instruments in the core survey were the Revised Nursing Work Index (NWI-R) (Aiken & Patrician, 2000) and the Maslach Burnout Inventory (MBI) (Maslach, Jackson, & Leiter, 1996). In the Ontario version of the survey, questions on frequency of neck and back pain and self-rated general health were added, as well as either an organizational trust scale (Cook & Wall, 1980) or the Effort and Reward Imbalance (ERI) scale (Siegrist, 1996). Questionnaires with one or the other of these two scales were randomly distributed to half of the sample.

The hospital work environment reported in this study was measured using two of the above instruments: the NWI-R (core survey) is a nurse-specific measure of the work environment, while Siegrist's ERI



(Ontario survey) is a generic psychosocial measure of the work environment. The NWI-R contains three well-established subscales measuring the professional environment created by an organization: (1) *nurse autonomy* — five questions addressing supervisory support for nurses, ability to make and control patient-care decisions, not having to go against nursing judgement, and decision-making support; (2) *control over the practice setting* — seven questions addressing adequacy of support services, enough time to discuss nursing problems, enough RNs for quality patient care, enough staff to get work done, quality of nurse-manager leadership, opportunity for specialized work, and patient assignments that foster continuity of care; and (3) *nurse-physician relationship* — three questions addressing collaboration, teamwork, and quality of relationship between nurses and doctors. The NWI-R has been used extensively in the United States in relation to studies of “magnet” hospitals. According to the authors, when aggregated across all nurses in an institution, higher scores on the three NWI-R subscales indicate better work environments (Aiken & Patrician, 2000).

Some of the psychometric properties of the revised NWI-R have recently been published (Aiken & Patrician, 2000). Internal consistency values are high: Cronbach’s alpha at 0.96 for the entire NWI-R, with aggregated subscale alphas of 0.84 to 0.91. Aspects of NWI-R validity have also been discussed, including face validity through the origin of the instrument, discriminate validity through its ability to differentiate between nurses who worked within a professional practice environment and those who did not, and ability to explain differences in nurse burnout. However, no formal (confirmatory) factor analysis results have been reported.

The ERI scale uses a total of 17 questions to address the perceived efforts and rewards ratio: *efforts* — six questions addressing the mental and physical demands of work, pressure to work overtime, work disruption, and time pressure; and *rewards* — 11 questions addressing respect, fairness, status, job prospects, job security, co-worker and supervisor support, and salary adequacy. After adjusting for the different number of items in the two scale components, the effort-reward ratio is calculated. As with the NWI-R scale — and since in this analysis we are interested in hospital-level differences only — individual nurse scores for each ERI item are pooled within each hospital prior to generating an effort:reward score. Consequently, a higher ERI score indicates a poorer work environment.

The psychometric properties of the ERI scale have been examined and found to be satisfactory (Hanson, Schaufeli, Vrijkotte, Plomp, &

Godaert, 2000). The internal consistency of the subscales used in our analysis was acceptable, with Cronbach's alpha values above 0.70. Using confirmatory factor analysis, the items also loaded correctly according to their suggested subscales, indicating good factorial validity for the component scales used in determining the ratio. The scales also demonstrated convergent validity by loading on a second order factor, health functioning (Hanson et al.).

Four hospital-level indicators of nurse health were considered for the analysis: the emotional exhaustion ("burnout") score from the MBI (core survey) (a higher score equals more burnout); frequency of musculoskeletal pain based on a combined neck/back pain score (1 = no pain; 5 = constant pain) (Ontario survey); self-rated general health (1 = excellent; 5 = poor) (core survey); and percentage of nursing staff who were absent at least 1 day in the preceding 3 months due to illness (Ontario survey). Higher values indicate lower workforce health scores for all four measures.

### *Analysis*

The survey data were used to generate hospital-level measures by aggregating individual responses from nurses at each institution. Since all variables used in the analysis are expressed at the institutional level, and since nurses were randomly selected from within the hospital, inferences apply to the entire hospital nursing staff as opposed to any individual nurse. For individual questions, the sum of all responses was averaged to generate a profile of the hospital. Examples of this approach were questions related to nurse characteristics, such as age or duration of employment in the hospital/unit, and job characteristics, such as percentage of nurses working full-time or percentage with a university degree. For composite instruments, such as the NWI-R and ERI scales, the scores for individual items were averaged within each institution to generate scores for hospital-based items, which were then used to generate scale scores. The validity of this type of aggregated analysis for the NWI-R is described elsewhere (Aiken & Patrician, 2000).

Group differences were tested using analysis of variance (ANOVA). To determine the relative importance of the different possible explanatory variables, multivariable models were examined, controlling for the effects of several factors simultaneously, thereby allowing for assessment of the independent contribution of each model term. Separate regression models were constructed for each of the four outcomes listed in Table 3. To help ensure comparability of the different models, a fixed set of explanatory variables was tested as a block of covariates rather

than using a stepwise model-building procedure. Since the main aim of this analysis was to examine the impact of the hospital work environment on nurse health indicators, we controlled for differences amongst institutions in the demographics of the nursing workforce, including mean nurse age, mean years of experience on the current unit, mean years in nursing, and proportion of nurses with a nursing degree (BScN). While some of these characteristics, most notably age, are undoubtedly associated with health in their own right, they were not the focus of this paper and are thus treated primarily as possible confounders in our analyses. The regression models also included terms for type of hospital (based on Ontario Ministry of Health and Long-Term Care criteria: C = community hospital, S = small hospital, T = teaching hospital) and proportion of nurses working full-time.

All regressions were weighted using the number of nurses sampled from each hospital, thus allowing for appropriate representation of data from each hospital. In addition, since scales with different scoring ranges were used in the survey, standardized beta coefficients are presented so that the relative importance of the different covariates can be determined (i.e., the original scores were re-scaled to the same reference base so that a one-unit increase in a regression coefficient means proportionately the same thing for each model term). (Only those hospitals represented by responses from at least 10 nurses were included in the analysis.) All computer analyses were conducted using SAS Version 8.1.

## **Results**

### *Descriptive Analysis*

Descriptive information on the workforce of the participating hospitals is found in Table 1, which compares the three hospital types (community, small, and teaching) on distribution of the basic characteristics used later in the analysis. The general characteristics did not differ substantially for the three hospital types, although nurses in teaching hospitals were slightly younger, with correspondingly fewer years of experience either in their current hospital/unit or overall as an RN. However, teaching hospitals reported fewer part-time staff and had a substantially greater proportion of staff trained at the BScN level than the other two types.

With regard to the key covariates in this study, the nurse-specific work environment scales did show some differences across hospital types, as shown in Table 2. In general, teaching hospitals reported higher levels of autonomy, control over practice, and nurse-physician

**Table 1** *Mean Values for Workforce Characteristics*

Population Descriptor	Mean Value (sd) by Hospital Type			
	Small (N = 49)	Community (N = 95)	Teaching (N = 16)	Combined Hospital Sample (mean) (N = 160)
Mean age of nurses (years)	44.4 (3.6)	44.8 (2.2)	43.6 (2.1)*	44.6 (2.7)
Years worked on current unit	3.7 (0.6)	3.4 (0.4)	3.3 (0.3)**	3.5 (0.4)
Years worked as RN at current hospital	15.6 (3.1)	15.1 (2.4)	13.5 (2.6)**	15.1 (2.7)
Years worked as RN	19.9 (3.6)	19.9 (2.2)	18.3 (2.1)*	19.7 (2.7)
Percentage of nurses working part-time	63 (14)	56 (13)	46 (12)***	57 (14)
Percentage of nurses with a BScN or greater	12 (8)	16 (8)	24 (9)***	16 (9)
* $p < 0.05$ ; ** $p < 0.01$ ; *** $p < 0.001$ .				

**Table 2** *Mean Values for Hospital Work Environment Measures*

Variable	Mean Value (sd) by Hospital Type			
	Small (N = 49)	Community (N = 95)	Teaching (N = 16)	Combined Hospital Value (N = 160)
Effort-reward imbalance score (higher is worse)	0.68 (0.09)	0.67 (0.07)	0.69 (0.04)	0.68 (0.04)
NWI-R nurse autonomy (higher is better)	12.97 (1.34)	12.73 (0.73)	13.13 (0.81)*	12.40 (1.00)
NWI-R control over practice setting (higher is better)	16.27 (2.21)	16.54 (1.06)	17.84 (1.34)*	16.68 (1.54)
NWI-R nurse-physician relations (higher is better)	8.79 (0.94)	8.40 (0.56)*	8.73 (0.54)	8.55 (0.75)
* At least one statistically different mean value across the three hospital types: $p < 0.05$ .				

relations than the other hospitals, although small hospitals showed equivalence with teaching hospitals on the latter subscale. In contrast to the nursing-specific measures of the work environment, there were no strong differences across institutions on the ERI scale.

The health outcomes examined in this study did not differ greatly across hospital types (see Table 3). It should be noted, however, that teaching hospitals were at or near the lowest mean health rating in all four of the outcomes examined.

**Table 3** *Mean Values for Nurse Health Indicators*

Variable	Mean Value ( <i>sd</i> ) by Hospital Type			
	Small (N = 49)	Community (N = 95)	Teaching (N = 16)	Combined Hospital Value (N = 160)
General health (1 = excellent; 5 = poor)	1.89 (0.22)	1.85 (0.13)	1.80 (0.17)	1.86 (0.17)
Emotional exhaustion ("burnout") (higher is worse)	21.0 (4.42)	22.0 (2.84)	22.2 (2.79)	21.7 (3.41)
Combined back/ neck pain rating (1 = no pain; 5 = constant pain)	2.67 (0.38)	2.60 (0.24)	2.60 (0.23)	2.62 (0.29)
Percentage of nurses who were absent at least 1 day in preceding 3 months due to illness	0.38 (0.15)	0.41 (0.12)	0.49 (0.10)*	0.41 (0.13)
* At least one statistically different mean value across the three hospital types: $p < 0.05$ .				

### Multivariable Regression Results

The results of the multiple regression analyses are shown in Table 4. For emotional exhaustion, the model explains a substantial portion of the difference amongst hospitals, as evidenced by its model r-square value of almost 0.6. In that model, the work environment factors are the most important terms, with control over practice and effort-reward imbalance scores appearing to have a strong effect on mean nurse burnout

**Table 4** *Multivariable Linear Regression Results for Hospital-Level Indicators of Nurse Health*

Model Terms	Standardized Regression Coefficients			
	Emotional Exhaustion ("Burnout")	Neck/Back Pain	General Health	Absence Due to Illness
Merged (yes)	-0.0246	0.0324	0.0836	0.0630
Hospital type: Community	Ref	Ref	Ref	Ref
Teaching	0.0939	0.0461	-0.1216	0.0408
Small	-0.1412*	0.0709	0.1372	0.0083
Percentage of nurses full-time	0.1659**	0.1319	0.2177**	0.3979***
NWI-R nurse autonomy	-0.1059	-0.2574*	0.0898	0.1155
NWI-R control over practice setting	-0.4573***	-0.0048	-0.2951*	-0.1647
NWI-R nurse-physician relations	-0.0515	0.1037	0.0254	-0.0885
ERI score	0.2742**	0.1766 <sup>a</sup>	0.1373	0.0636
Model R-square	0.590	0.160	0.222	0.356
Model F-statistic	16.17	2.14	3.2	6.22
Model <i>p</i> -value	< 0.0001	0.0148	0.0003	< 0.0001

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

<sup>a</sup> – borderline significance,  $p = 0.053$ .

Ref = reference category.

Models were also adjusted for age, years on current unit, years at current hospital, years as an RN, and education level (i.e., proportion of nurses in the hospital with a nursing degree). Since the beta coefficients shown are all standardized, the largest coefficient found in each column can be assumed to have the strongest association with outcome amongst the model terms.

levels. Nurses in small hospitals were somewhat less likely to show burnout. In addition, as the proportion of nurses working full-time increases, the level of burnout also increases.

The musculoskeletal pain model explained the least variance of the four outcomes examined, accounting for only 16% of the differences observed across hospital types — perhaps reflecting the (unmeasured) importance of other factors for this outcome, especially the physical demands of work. It is also possible that there is narrow range (i.e., limited variance) in exposure to the demands of work across all hospital



types, hence the lack of explanatory power for a model examining factors only at the hospital level. Only nurse autonomy was significantly associated with pain, while the mean ERI score was of borderline significance ( $p = 0.0533$ ). The latter variable is the only scale to include a question on the physical demands of work.

For both the general health and absence due to illness models, the most important explanatory variable was percentage of full-time nurses. The NWI-R subscale for control over practice was associated with general health but not with absence due to illness ( $p = 0.1453$ ). Nurse-physician relations were not associated with health indicators in any of the models.

## Discussion

The findings of this study raise important questions and shed light on some of the likely key factors in nurses' health in Ontario acute-care hospitals. Based on the literature, one might expect that hospitals with greater nurse autonomy, better control over practice on the part of nurses, and better nurse-physician relationships would show better overall health indicators. While this assumption has preliminary support from analysis of this data set at the individual nurse level (Kerr et al., submitted; Shamian & Villeneuve, 2000), our findings of the analysis at the hospital level present a possibly more complex picture.

Based on the descriptive analysis we can infer that, of the three hospital types, nurses in teaching hospitals report the highest scores for the NWI-R subscales, although the differences are small. Despite this finding, however, teaching hospitals also had statistically significantly higher rates of missed days of work due to illness in the preceding 3 months, as well as tending towards the lowest scores on the other health outcomes examined. This apparent contradiction may be due in part to fundamental differences in nursing work and in the make-up of the nursing workforce amongst the three hospital types, a notion supported by our multivariable regression findings (i.e., little or no significant effect for hospital type after controlling for other factors). If a sufficiently large sample of institutions were available, an analysis of the relationship between health outcomes and the work environment scales stratified within the different hospital types could help elaborate this finding. Similar matched analyses elsewhere have substantiated the posited relationship between burnout and the NWI-R scales (Aiken, Sloane, Lake, Sochalski, & Weber, 1999).

One of the issues arising from our analysis that will need further study is our finding of an increased health risk for full-time employment. In this and other analyses of the survey data (National Opinion Research Center, 2000), there is a consistent indication that full-time nurses experience more sickness, burnout, and job dissatisfaction than part-time nurses. In our study, teaching hospitals reported a statistically significant higher level of full-time nurses than community and small hospitals. It is possible that full-time work is a stronger predictor of illness than overall professional working conditions (e.g., NWI-R, autonomy, control over practice, and relationship with physicians). It is also possible that the potential mediating effects of a positive work environment, as expressed by either the NWI-R or the ERI, can be overshadowed when the workload is too heavy. This hypothesis is supported by our multivariate analyses, which indicated that the NWI-R control over practice subscale, perhaps the core of the NWI-R measure, did have a relatively consistent and positive effect on the health outcomes examined, once the proportion of full-time nurses was accounted for. For both burnout and general health, control over practice was the hospital variable with the strongest association with health. It is possible that this scale is serving as a proxy workload indicator, given that most of the questions directly assess the availability of adequate resources — for example, enough staff to get work done, enough time and opportunity to discuss care, enough nurses to provide quality care, adequate support services, and patient assignments that foster continuity of care. Workload and adequacy of resources are often raised as nursing concerns in the post-reorganization workplace, and our analysis lends some empirical support to these concerns.

The link between the work environment and nurse health is also supported by the results for the other key exposure measure in our study, the ERI model. Siegrist (1996) argues that workers are at increased health risk when the efforts they expend at work are not adequately balanced by the rewards of work. The ERI has only recently been used in studies of musculoskeletal outcomes and has not, to our knowledge, been used previously in multi-site studies of burnout or general health. Nor has the model been presented previously aggregated at the institutional level. It is possible that creating a hospital-level score for ERI has masked or diluted the strength of the true association for this variable with the health outcomes examined. There was also a substantial degree of correlation between the ERI and NWI-R control scores ( $r = -0.47$ ), indicating possible overlap of the explanatory power of the scales, which may have diluted the strength of associations when both are in the model. Further work is planned with this

data set to better explore the relative contributions of the different variables examined, using hierarchical multiple regression analysis that can adjust for the complex structure of the data set (i.e., nurses within units within hospitals).

While our results indicate that certain hospital-level characteristics may influence nurse health, there are important caveats about the strength of these inferences. Our analysis used aggregation of individual-level (nurse) data to determine hospital scores for both outcomes and covariates. Use of aggregate data may underestimate the true variance for these variables and thereby potentially inflate our observed correlations. However, given the misclassification that may occur when individual-level data are aggregated to the institutional level, it is not clear that such a bias would have a powerful effect on our study. In addition, we are drawing inferences on the health of nurses based on a cross-sectional survey design. While such designs are helpful for generating research hypotheses, they are inherently limited in their ability to establish causality. Thus any inferences drawn from our results should be viewed in light of this uncertainty and should be further tested, especially using longitudinal study designs. Further work is also warranted with regard to full-time versus part-time work, as our results indicate this may be a strong marker of ill health.

Any attempt to generalize these findings to other settings must take into account the fact that the data were collected only from acute-care hospitals, and in a province where hospitals are stand-alone organizations and not regionalized as in other Canadian provinces.

## **Conclusions**

Increased workload is the leading employment concern amongst Canadian nurses (Baumann et al., 2001). In this study, full-time work was found to be associated with burnout, poor general health, and loss of control over practice.

As we enter an era of international nursing shortages, health-care policy-makers and decision-makers are seeking ways to develop human resources policies that will ensure the production and retention of adequate numbers of health-care providers, including nurses. With the most serious nursing shortage in modern history beckoning, it is paramount that we produce the knowledge to assist human resources planners and policy-makers. Nurses in Canada choose to engage in the labour market under specific conditions. Over half of all nurses work part-time, either by choice or because of job availability. Nurses are

reporting working conditions that are not conducive to job retention, job satisfaction, or good health. Based on the findings of this study, full-time work increases the health risk of nurses in the hospital setting.

Canada has the lowest rate of full-time nurses amongst the five countries that participated in the international study (Aiken et al., 2001). Today, only 50% of Canadian nurses are employed full-time (CIHI, 2001). In order to stabilize the nursing workforce, it is essential that the number of full-time nurses be increased. Yet the present study found that full-time work appears to be related to a higher prevalence of illness amongst nurses than part-time work.

It is essential that the findings of this study be acted upon. They suggest that workload and factors related to control over practice are strongly associated with ill health, burnout, job satisfaction, and other workforce health factors. Hospitals must take measures to calibrate workload and work environments and thus ensure a healthier workforce. Once employment environments have been made worker-friendly, we should not see a higher prevalence of ill health amongst full-time nurses.

For policy-makers there are several challenges. It is not sufficient to merely produce nurses: if a serious attempt is not made to retain nurses in the workplace, and in Canada, we will continue to witness the revolving-door phenomenon. With nurses showing the highest incidence of illness and days lost (Akyeampong & Usalcas, 1998), and considering the relationship between full-time work and prevalence of illness, governments and employers will have to come together to find constructive solutions and turn the tide.

Policy-makers need to examine their role in a number of areas. Each country should have a mechanism for monitoring the health profile and working conditions of nurses. Hospitals should be responsible for creating and reinforcing work environments that are conducive to maintaining a healthy nursing workforce. Health and safety committees should be able to develop and implement policies that will lead to healthier workplaces. Nurses' workloads and nurse-patient ratios should be decided within the local organizational setting; if there are no mechanisms in place to deal with these issues, legislation is likely to emerge, as it has recently in California (California Nurses Association, 1999). Funding for health-care organizations should stipulate that equipment be provided to help reduce nurse injury. Lastly, accreditation standards should have clear indicators for measuring the quality of not only patient care but also the workplace; accreditation should be tied to excellence both in patient care and in the workplace.

In conclusion, a growing number of research studies are attempting to identify ways to ensure good nursing resource management. But policy-makers, health-care organizations, and health-care professionals — including nurses — must act promptly, as the shortage of nurses will rapidly lead to a shortage of nursing care. A sustainable health-care system depends on adequate nursing services.

## References

- Aiken, L.H., Clarke, S.P., Sloane, D.M., Sochalski, J.A., Busse, R., Clarke, H., Giovannetti, P., Hunt, J., Rafferty, A.M., & Shamian, J. (2001). The International Hospital Outcomes Research Consortium (1). Nurses' reports of hospital quality of care and working conditions in five countries. *Health Affairs* (May-June).
- Aiken, L.H., & Patrician, P.A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nursing Research*, 49(3), 146-153.
- Aiken, L.H., Sloane, D.M., Lake, E.T., Sochalski, J., & Weber, A.L. (1999). Organization and outcomes of inpatient AIDS care. *Medical Care*, 37, 760-772.
- Akyeampong, E.B., & Usalcas, J. (1998). Work absence rates (1980 to 1997). *Statistics Canada Catalogue #71-535-MPB*, 9. Ottawa: Statistics Canada.
- Baumann, A., O'Brien-Pallas, L., Armstrong-Stassen, M., Blythe, J., Bourbonnais, R., Cameron, S., Irvine Doran, D., Kerr, M., McGillis Hall, L., Vézina, M., Butt, M., & Ryan, L. (2001, June). *Commitment and care: The benefits of a healthy workplace for nurses, their patients and the system*. Ottawa: Canadian Health Services Research Foundation and Change Foundation.
- Burke, R.J., & Greenglass, E.R. (2000). Hospital restructuring and downsizing in Canada: Are less experienced nurses at risk? *Psychological Reports*, 87, 1013-1021.
- California Nurses Association. (1999). *Fewer nurses caring for sicker patients in Californian hospitals. Report calls for State to adopt ratios to protect the public*. Press release. Oakland, CA: Author.
- Canadian Institute for Health Information. (2000). *Healthcare in Canada: A first annual report*. Ottawa: Author.
- Canadian Institute for Health Information. (2001). *Canada's health care providers*. Ottawa: Author.
- Cook, J., & Wall, T. (1980). New work attitude measures of trust, organizational commitment, and personal need fulfilment. *Journal of Occupational Psychology*, 53, 39-52.
- Decter, M.M. (1997). Canadian hospitals in transformation. *Medical Care Journal* (Suppl 3510), pp. OS70-75.
- Hanson, E.K.S., Schaufeli, W., Vrijkotte, T., Plomp, N.H., & Godaert, G.L.R. (2000). The validity and reliability of the Dutch effort-reward imbalance questionnaire. *Journal of Occupational Health Psychology*, 5(1), 142-155.



- Kerr, M.S., Shamian, J., Manno, M., Thomson, D., O'Brien-Pallas, L.L., & Koehoorn, M.W. (submitted). The work environment and nurse health: A multi-level analysis of burnout in acute care hospitals. IWH Working Paper #157.
- Maslach, C., Jackson, S.E., & Leiter, M.P. (1996). *Maslach Burnout Inventory manual*. Palo Alto, CA: Consulting Psychologists Press.
- National Opinion Research Center. (2000). The 1972–1996 General Social Survey cumulative file. Available online: [www/icpsr.umich.edu/GSS99](http://www/icpsr.umich.edu/GSS99) [accessed November 17].
- Shamian, J., & Lightstone, E.Y. (1997). Hospital restructuring initiatives in Canada. *Medical Care Journal* (Suppl 35) (10), 0S62–69.
- Shamian, J., & Villeneuve, M. (2000). Building a national nursing agenda. *Hospital Quarterly*, 4(1), 16–18.
- Siegrist, J. (1996). Adverse health effects of high effort–low reward conditions at work. *Journal of Occupational Health Psychology*, 1, 27–43.

### Authors' Note

This survey was part of an international project to assess the Outcomes of Hospital Staffing, funded by the National Institute of Nursing Research, National Institutes of Health (NR04513), in the United States, with Dr. Linda Aiken as principal investigator. The project includes three provinces of Canada (Ontario, British Columbia, and Alberta), as well as England, Scotland, Germany, and the United States. The Ontario research team comprises Dr. Judith Shamian, formerly of the World Health Organization, at Mount Sinai Hospital, Toronto; Dr. Geoffrey Anderson of the Faculty of Health Administration, University of Toronto; Dr. Jack Tu of the Institute of Clinical Evaluative Sciences, Toronto; and Dr. Michael Steven Kerr of the Institute for Work and Health, Toronto.

The authors acknowledge the help of Valerie Jones and Moriah Shamian-Ellen with manuscript preparation.



# **Methodological Issues in Health Human Resource Planning: Cataloguing Assumptions and Controlling for Variables in Needs-Based Modelling**

**Gail Tomblin Murphy**

Les modèles de Planification des ressources humains en matière de santé [Health Human Resource Planning] (HHRP) reflètent les futures exigences infirmières et sont élaborés en fonction d'un éventail de facteurs liés au modèle utilisé. Il existe un urgent besoin de comprendre davantage les sources de gauchissement quant à la modélisation statistique, dans le but de nous doter de solides formules précises qui nous serviront de guides. Cet article traite de ces questions telles qu'elles s'appliquent dans le contexte de la recherche infirmière HHRP basée sur les besoins. Il présente une critique et discute de la documentation pertinente portant sur : (1) la mise à l'épreuve des formules, (2) l'élimination d'erreurs écologiques et atomistiques, (3) les liens directs ou indirects entre les besoins et les soins de santé, et (4) les solutions de rechange permettant de regrouper les analyses portant sur l'évaluation de la relation entre les besoins en matière de santé et le recours aux services infirmiers. L'article conclut que la modélisation à niveaux multiples permet d'effectuer une analyse de simulation des individus et de leurs écologies, et que la modélisation de variation pour secteur réduit s'avère prometteuse quant à l'évaluation des liens entre les besoins en matière de santé et l'utilisation des services de santé.

Health Human Resource Planning (HHRP) models approximate future nursing requirements based on a variety of factors specific to the model being employed. There is an urgent need to develop a better understanding of the sources of bias in statistical modelling in order to ensure that we are guided by accurate and robust formulae. This paper addresses these issues as they apply in the context of needs-based HHRP research for nursing by presenting a review and discussion of the relevant literature as it relates to: (1) the testing of assumptions, (2) avoiding ecological and atomistic fallacies, (3) how need is directly or indirectly related to health care, and (4) alternatives to aggregate analysis for assessing the relationship between health needs and utilization of nursing services. The paper concludes that multilevel modelling is useful for the simulation analysis of individuals and their ecologies, and that small area variation modelling holds promise for assessing the relationship between health needs and utilization of nursing services.

---

*Gail Tomblin Murphy, PhD(c), is Associate Professor, School of Nursing, Dalhousie University, Halifax, Nova Scotia, Canada.*

## **Introduction**

Canada and other countries are experiencing a nursing shortage that is expected to become severe. Policy-makers, health-care leaders, and researchers are interested in developing a meaningful, long-term approach to health human resource planning in nursing. This will require collaborative efforts to develop effective mechanisms and policies for establishing, monitoring, and predicting nursing requirements to meet the health needs of the population (Dickson, 2001; Sechchrist, Lewis, & Rutledge, 1999). It is critical that these resource allocations be based on evidence. Health human resource planning (HHRP) models are intended to provide such evidence by approximating planning requirements on a variety of factors specific to the model being employed. Regardless of which model is used, however, sound methods of study design and data analysis are essential if the evidence is to be meaningful. To complicate matters, HHRP research is a nascent discipline for which a firm scientific basis has not yet been fully worked out and tested. Methods for predicting human resource requirements are few in number and continue to be plagued with methodological and conceptual difficulties (O'Brien-Pallas, Birch, Baumann, & Tomblin Murphy, 2000). Until very recently, researchers in HHRP have not focused on the development of a theoretical knowledge base favourable to the creation of theoretical frameworks. Furthermore, there has been little consideration of research design and empirical specification of relationships among variables. As a result, health researchers often remain blind to the hierarchical structure of the conceptual models and data sets with which they are working. This has led to the development and dominance of statistical models that fail to capture the importance of the interface between individual-level and community-level data (Birch, Stoddart, & Beland, 1998). There is an urgent need to develop a better understanding of the sources of bias in statistical modelling, in order to ensure that we are guided by accurate and robust formulae (Carr-Hill et al., 1994).

Understanding the sources of bias in HHRP research requires first that we identify relevant assumptions, and second that we develop effective strategies to control for variables associated with these assumptions, the ultimate goal being to strengthen the generalizability of findings in order to more accurately forecast the need for nurses across a range of practice settings and jurisdictions. I will address these general considerations as they apply to needs-based HHRP research for nursing. Specifically, this will require a discussion of: the improper testing of anticipatory assumptions, codependency assumptions, and

assumptions related to design and analysis; the need for the development of multilevel modelling methods for the simulation analysis of individuals and their ecologies, in order to avoid problems associated with both the ecological fallacy and the atomistic fallacy; strategies to overcome the limitations of past research caused by a failure to adequately account for how need is directly or indirectly related to health care; and the use of small area variation as a promising alternative to aggregate analysis in enhancing our understanding of the relationship between health needs and utilization of nursing services.

Before exploring the main themes of this paper, I will describe briefly three HHRP methods (utilization-based, needs-based, and demand-based) and their related assumptions, questions, and methods (Lavis & Birch, 1997; O'Brien-Pallas et al., 2000). Table 1 presents an overview of the three methods. By proceeding in this fashion I hope to make clear that the needs-based approach I am advocating has evolved from the experience gained working with utilization-based frameworks. In utilization-based models, the quantity, mix, and population distribution of current health-care resources are adopted as a baseline for estimates of future requirements. As shifts are predicted in the basic (i.e., age and sex) demographic characteristics of the population, these are compared to current baseline factors in order to predict future requirements. This approach, however, is limited by the fact that utilization rates are dramatically affected by factors other than the population characteristics typically included in utilization-based models (Lavis & Birch; O'Brien-Pallas et al.).

As the name suggests, needs-based planning models estimate future nursing requirements based on an empirical assessment of the levels of health need in the relevant population. Unlike utilization-based approaches, however, needs-based planning begins from the premise that the current distribution of nurses and nursing services is not necessarily optimal for addressing the needs of the population, and that nursing human resources must be redistributed if health needs are to be met (Evans & Mustard, 1995; Markham & Birch, 1997; Roos et al., 1995).

According to Eyles, Birch, and Newbold (1995), there are two broad approaches to needs-based planning: the absolute needs approach and the relative needs approach. The absolute needs approach attempts to quantify the health-care resources required to produce a target level of health for the general population. The relative needs approach considers the variation in health status among communities together with available resources in order to meet the needs of communities. The

<b>Table 1</b> <i>Common Methodological Frameworks for HHRP</i>			
<b>Approach</b>	<b>Assumptions</b>	<b>Question</b>	<b>Method</b>
Utilization-based	<p>Current level, mix, and distribution of services are appropriate.</p> <p>Appropriate level, mix, and distribution remain constant.</p> <p>Estimated future demographic profile is accurate.</p>	How many nurses are required to serve the future population in the way that the current population is being served?	<p>Uses population-based utilization rates as a baseline.</p> <p>Applies rates to demographic profile of future population.</p>
Needs-based	<p>(All) health needs can and should be met.</p> <p>Cost-effective methods can be identified and implemented.</p> <p>Unmet needs caused (only) by inadequate supply.</p> <p>Non-needs/non-cost-effective use of resources can be eliminated.</p>	How many nurses are required to meet the health needs of the population?	<p>Population-based rates of health needs replace population-based use of services.</p> <p>Identifies nurse requirements for serving population's health needs.</p> <p>Applies rates to demographic profile of future population.</p>

<p>Demand-based</p>	<p>Health needs are only one of a set of social priorities.</p> <p>Definitions of need are less than precise.</p> <p>There are clear possibilities for resource trade-offs.</p>	<p>How many nurses are required to support society's commitment to health care?</p>	<p>Estimates the size of the economy in supporting health care.</p> <p>Estimates the proportion of the economy devoted to health care.</p> <p>Estimates the proportion of health-care expenditures allocated to nursing.</p> <p>Estimates the number of nurses that could be employed using these resources.</p> <p>Provides a fiscal-resource context for needs-based (or utilization-based) methods.</p>
<p>Alternative approaches address different questions that arise from the basic assumptions of each model and that ultimately determine the method. Each approach is informed by the experience of the previous one. The assumptions associated here with each model are not intended to map precisely onto the assumptions and strategies discussed in the text.</p>			

down side of the former approach is the risk that resources will be allocated based on the demand for services (rather than actual need), thus placing too great a claim on social resources. It is primarily because of this worry that the relative needs approach is preferable. Data obtained through the relative needs approach can better be used to plan distribution of the human resources workforce in which the overall cost of increasing the supply is explicitly acknowledged. Nursing resource planning must therefore consider the relative needs of communities rather than simply the demand for services as expressed as a function of the utilization of nursing and related services. Otherwise the use of resources will in fact be based on demand rather than need, with the consequence that HHRP will continue hopelessly endeavouring to provide an ever-increasing number of workers. Both approaches, however, require assessment of the health needs of populations and variations among communities in order to match resource allocations to the needs of the population.

The type of needs-based model being advocated treats nursing requirements as independent of current service utilization while recognizing that they are interdependent with the requirements for other health human resources and various other factors. Moreover, to the degree that current needs are not all met, unmet needs will be included in the estimation process. Thus, the main virtue of this approach lies in its ability to avoid perpetuating existing inequities and inefficiencies in the deployment of nursing services (O'Brien-Pallas et al., 2000). Effective demand-based approaches to HHRP research attempt to incorporate economic considerations into the epidemiological principles of the needs-based approach. The starting point is to estimate the size of the economy from which nursing and competing services will be funded, in order to then estimate the proportion of total resources that will be allocated to health care and the share of those resources that will be devoted to nursing (Lavis & Birch, 1997). Notwithstanding the welcome inclusion of general economic considerations brought to the mix by effective demand-based approaches, it remains clear that epidemiological information on the level and distribution of needs in the population, and the role of nursing resources in meeting those needs, will continue to be at the heart of any plausible statistical model employed in HHRP. Furthermore, measuring population health needs will help identify when these needs can reasonably be met through the distribution of health-care resources and when they may best be met through various other social mechanisms. Although the health-care system may not have the resources to directly impact all of the determinants of health, it is nonetheless often left to deal with the conse-



quences of a more general social failure to address them. It is therefore imperative that the measurement and understanding of population health needs be an integral part of HHRP.

It is at least in part for this reason that I have chosen to use needs-based modelling as the backdrop to the present discussion of assumptions and variables.

## **Cataloguing Assumptions**

### *Anticipatory Assumptions*

The success of forecasting nursing requirements varies with the ability to accurately predict the future (O'Brien-Pallas et al., 2000). The accuracy of projections will in turn depend on the completeness, accuracy, comprehensiveness, and availability of information (O'Brien-Pallas, 1998; Pong, 1997). Unfortunately, however, many jurisdictions in Canada and elsewhere lack the management infrastructure and data on which to base projections. Projections, therefore, often are made on the basis of a set of anticipated conditions. These "anticipatory assumptions" concern both conditions that are likely to remain static and conditions that are likely to undergo change. Typically, however, they concern only those relevant background conditions that change relatively slowly, if at all. Because of this resistance to change, anticipatory assumptions are unlikely to be susceptible to small, rapid, or short-duration changes in other conditions — for example, a change in the demand for nurses. Only a relatively large-scale and lasting change in other conditions is likely to produce a noticeable alteration in these anticipatory assumptions. Thus, anticipatory assumptions provide a suitably stable assumptive basis upon which to conduct needs-based HHRP. This is not to say, however, that unanticipated shocks to the system that are both rapid and severe in magnitude might not jeopardize the stability of the planning platform. Beyond this, projections will invariably be influenced by the values and political commitments that underlie the policy framework of the health-care system (Eyles, Birch, & Newbold, 1993).

As an example of what I call anticipatory assumptions, policies and strategies for nursing resource planning are often guided by the following assumptions: that the current distribution of nurses is not optimal for population health needs; that the distribution of nurses will reflect human and fiscal realities; that fiscal resources are allocated based on their availability relative to competing demands and the vagaries of political will; that practice conditions will remain

unchanged for nurses in the short term; that the health-care system will be dramatically affected by demographic changes in society; and that the health-care system will continue to be based on a “medical model” and remain substantially under the control of physicians (Hughes, Tomblin Murphy, & Pennock, 1998).

Other anticipatory assumptions relate to areas such as health services, nursing utilization and trends, and health needs. Current approaches to projecting nursing resources, for instance, are often based on a recognition that the population is aging. According to O’Brien-Pallas et al. (2000), it is reasonable to assume that average per capita age distribution will continue to move towards an older median age. At the same time, it must be assumed that the proportion of other age groups will decrease. The net effect of this shifting age distribution must be considered in the analysis of data used to predict nurse resource requirements if the predictions are to match future need.

### *Codependency Assumptions*

Not all relevant assumptions are related to anticipated conditions. Another set of assumptions recognizes a priori that the supply and distribution of other health services and personnel are also likely to influence the demand for nurses. These “codependency assumptions” are less fixed than the anticipatory assumptions described above and are therefore subject to relatively rapid fluctuations. They are also influenced by many of the same factors that affect the demand for nurses. For example, while nursing demand is unlikely to be independent from the supply and distribution (both geographical and in terms of specialty) of beds, services, physicians and other providers, it is also the case that as the factors that create the demand for nurses change, so too will the supply and distribution of these resources. It is also likely to be the case that there will be simultaneity between the demand for nurses and these other resources — that is, the demand for nurses itself (not just the factors that create the demand) may have a measurable impact on the demand for and availability of other resources. Such changes may in some instances be quite precipitous when changes in nursing demand occur.

The distinction between anticipatory and codependency assumptions is an important one. The former provide a suitably stable assumptive platform from which to study nursing demand, thus adding strength of generalizability to the statistical models that incorporate them. Making explicit these anticipatory assumptions may also assist researchers in assigning bias. Codependency assumptions serve an

entirely different theoretical and pragmatic function: they force researchers to consider more closely the full range of codependent variables and how best to control for them.

### *Assumptions Related to Design and Analysis*

There are other kinds of assumptions that are more directly related to research design and data analysis. Assumptions underlying regression analysis, for example, can cause biases and distortions in data analysis. These assumptions relate to: model specification, measurement, fixed and random variables, and residuals (Pedhauzur & Schmelkin, 1991). Researchers are challenged to find the appropriate statistical models to link with theoretical frameworks and research designs. Assumptions around model specification and measurement are in most urgent need of attention, since they have not been well attended to in health services and nursing research until quite recently. According to experts in measurement and design, researchers need to be reminded that the statistical models used should reflect the theoretical models (Pedhauzur & Schmelkin). However, because the theoretical underpinnings of HHRP remain relatively inchoate, the link between statistical methods and theoretical models is often not apparent. Unless researchers pay attention to these assumptions, their findings will be either meaningless or misleading. For example, the regression equation must reflect the formulation regarding the effects of the independent variable(s) on the dependent variable(s). Failure to include relevant variables in the research design can also lead to biased parameter estimation. Conversely, inclusion of irrelevant variables can affect the significance testing of coefficients for the relevant variable. Specification errors can also result when the manner in which the variables in the model affect the dependant variable is incorrectly specified.

Investigators may also assume that the measurement of independent variables is immune to error. However, biased estimation of regression coefficients can result from random errors in the independent variable (Pedhauzer & Schmelkin, 1991). Random measurement errors in multiple regressions may lead to either overestimation or underestimation of the regression coefficient. The biasing effects can also affect the variables that correlate with the target variable in question.

A common approach to controlling the magnitude of errors and their impact on the estimation of model parameters is Structural Equation Modelling (SEM). This approach takes into account measurement errors when estimating model parameters (Pedhauzer &

Shmelkin, 1991). The literature suggests that SEM holds promise for health services and nursing research. At present, however, researchers are struggling to find the appropriate statistical models to link with theoretical frameworks and research designs. The paucity of such models highlights the importance of developing analytical strategies that make assumptions explicit and control variables within a coherent theoretical framework.

### **Controlling for Variables**

Recall that the goal of devising meticulous and effective strategies to control for variables is to strengthen research findings and enhance their generalizability. In considering the appropriate theoretical framework, research design, and statistical methods to control for variables, it will be helpful to consider some important issues in needs-based HHRP. How, for instance, can simultaneity (i.e., mutual dependence) between health status and nurse resource allocation be addressed? Will generic measures of health status be more closely related to nurse resource utilization or to need? How will the approach to controlling variables lead to appropriate projections of need?

Researchers need to consider the following issues associated with HHRP assumptions: (1) Researchers typically introduce community data into statistical models in the same way they enter individual data, causing confounding effects. (2) Aggregate analysis may be an inappropriate methodology for studying place differences (regional variation). (3) Researchers do not consistently use specifications that allow the model to reflect the underlying conceptual framework. (4) The Ordinary Least Squares (OLS) regression techniques often used by researchers in health services research do not consider selectivity bias in utilization studies. Moreover, if supply affects needs, it is inappropriate to use conventional OLS methods in determining utilization of nursing and other health services.

Some researchers consider these issues in their research designs. In the examples that follow, the researchers stress the importance of using statistical models that reflect the nature of conceptual models and data sets.

In their work in estimating relationships using models that reflect the hierarchical nature of both conceptual models and data sets, Birch et al. (1998) have recently developed creative statistical methods for addressing the complexity of the individual-community interface. Based on methods used in educational research (Goldstein, 1994), they

applied methods to demonstrate “how separate statistical models for variation in health between communities and between individuals can be combined to provide a multilevel model for the determinants of the health of populations” (p. 402). A community effect — “a variation in an individual level dependent variable embodied within communities” (p. 402) — is a critical consideration when using a statistical model. Specifically, this means that although it is defined at the community level, the community effect is concerned with influences on or through individuals according to the community in which they live.

### *Multilevel Modelling*

Studies using multiple units of analysis in which comparisons among or between communities are desired require statistical methods that can address the different levels of analysis and at the same time deal with the complexities of the community-individual interface. Researchers typically introduce community data into statistical models in the exact same way that they enter individual data, thus causing a confounding of the effects. In order to properly estimate the relationship between a particular community-level variable and a particular individual-level variable, one should allow for the possibility that the community-level variable does not fully explain between variation in individual-level relationships. To adequately explain between variation, slopes and intercept terms for each community would need to be included (Birch et al., 1998). Birch et al., using an alternative approach based on the work of Goldstein (1994), suggest a multilevel model that reflects the hierarchical structure of the individual community data to explore the variation at the community level and covariation between community-level and individual-level variables.

Duncan, Jones, and Moon (1993) argue along similar lines, stating that analyses of variations in health require multilevel methods that acknowledge both the ecological fallacy (i.e., transferring results from aggregates to individuals) and the atomistic fallacy (i.e., researching exclusively at the individual level, thus failing to account for the context in which the individual action occurs). In needs-based HHRP, for example, the ecological fallacy may occur if a community's health profile is not representative of the health status of the individuals actually using health services in that community (Jones & Duncan, 1995). This concern is compounded when measures of health are derived exclusively from pre-existing databases (e.g., National Population Health Survey, Canada Census data) rather than derived also from individuals presenting for care. The ecological fallacy is problematic in this



context because it will result in the creation of an incomplete analytical model of the hierarchical relationships between utilization and individual characteristics as well as between utilization and community characteristics.

Some authors ( Birch et al., 1998; Duncan et al., 1993) describe multilevel modelling as a two-step process: specifying models at different levels in a hierarchy, then combining them into a single overall model. This process consists of an individual or micro-model, in which within-place equations are represented, and an ecological or macro-model, in which the parameters of the within-place model are set based on responses from between-place models.

Aggregate analysis is an inappropriate methodology for studying place differences. When researchers are forced to work at a single aggregate level, they often resort to grouping together qualitatively heterogeneous individuals in order to ensure statistically reliable rates based on a large number of respondents (Duncan et al., 1993). This may be conceptually damaging, since theoretically important relationships between people and places are collapsed for technical reasons alone. On the other hand, multilevel modelling does allow for simulation analysis of individuals and their ecologies.

It is important that the specifications used enhance the capacity of the model to reflect the underlying conceptual framework (Birch et al., 1998). For instance, the statistical approach of Eyles et al. (1995) in their analysis of the relationship between need for care and utilization of nursing services in Canada is particularly interesting in the context of needs-based HHRP. They argue that there is a potential bias in extant utilization studies that do not recognize users of care as a self-selected group within the population sample of users and non-users. This selectivity bias violates the normality condition of the OLS regression techniques and precludes the use of Poisson regression, binomial model, and OLS. These concerns are reiterated by Newbold, Eyles, Birch, and Spencer (1998), who also point out that these methods have in fact been commonly used by researchers who fail to recognize the bias. Furthermore, Eyles et al. (1995) stress that it is critical researchers progress beyond simple use-need ratios and address the interaction of need with other explanatory variables.

As stated earlier, indirect measures of health should be used cautiously because they are in fact only markers for risks to health. Direct measures of health status (e.g., SF-36, SMR, and self-reported health status) should be used in examining the relationships between health needs and utilization. Researchers should consider the recent work of



Sutton, Carr-Hill, Gravelle, and Rice (1999), who have shown that there may be significant bias in respondents' self-reporting of health status. They have developed a model of the relationship between morbidity and health service utilization that allows for reporting errors and simultaneity. Eyles et al. (1995) have made a valuable contribution to the knowledge of statistical models by considering some of the issues associated with the assumptions in their work. Based on Andersen's (1995) theoretical framework, they studied the following variables: use (number of nurse contacts); need (general health); predisposing categories (age, sex, marital status, region of residence, employment status, activity level, degree of community contact, smoking, alcohol use, and lifestyle); and enabling categories (income, education, and household tenure). To ensure that the estimated variance of variables is meaningful, they weighted the sample data (using weighting developed by Statistics Canada). In addition, they developed the following four proxy variables for need, all of which are independent of need: individual assessment of general health, satisfaction with personal health, presence or absence of longstanding limiting illness, and number of days within a 2-week period that individuals were limited by health. They found a significant level of intercorrelation (correlation coefficients ranging from 0.24 to 0.56) among the four variables. Although not explored by Eyles et al. (1993), the number of comorbid states could also serve as a proxy variable for need.

Data analysis was carried out in two stages. During stage one probit regression was used to estimate the incidence of nurse utilization. Dummy variables were created for general health (need proxy) and entered in blocks into an equation based on need and predisposing or enabling categorization (Andersen & Aday, 1978). The variables were entered additively and forced into the equation based on prior knowledge of the relationship between use and the explanatory variable. Using Confirmatory Factor Analysis (CFA), goodness-of-fit of the model was determined through Likelihood Ratio (LR) testing, which measures overall significance of the model, and the Rho-squared test, which indicates the explanatory power of the model.

To test the relationship between nursing services utilization and need, Eyles et al. (1995) estimated utilization using a correction factor ( $\lambda$ ). The  $\lambda$  variable was estimated on the full sample using probit analysis before being entered into the least squares regression of number of nurse contacts on need and predisposing and enabling variables. The statistical significance of the  $\lambda$  variable was an indicator of whether the correction factor was significant.

During the second stage a multivariate model was employed to test the relationship between nursing utilization and selected socio-economic indicators. The first step was to divide the sample by level of need and analyze the data to determine horizontal inequity. This partitioning was carried out in order to explore the extent to which the relationships observed at the aggregate level can be generalized to the full sample, and then to identify relationships between utilization and other variables. However, this approach resulted in a sample that was too small to run the analysis. A second approach required the model to be re-estimated for the full range of users with interaction terms between need and specific explanatory variables. Although interaction terms may not lead to a large increase in the overall explanatory power of the model, they may be of help in explaining the observed relationships.

The approach adopted by Eyles et al. (1993) is laudable for its consistency with the theoretical framework and its contribution to our store of knowledge in statistical methods. Most notable is the discovery that "analysis of utilization at the aggregate level of population can conceal important and policy relevant relationships while revealing others that are essentially artifacts of inappropriate aggregation" (p. 43). The upshot is that populations of users of nursing services represent neither a homogeneous group nor a random selection of the total population.

Carr-Hill et al. (1994) argue that health needs may directly influence utilization of health care and that health-care utilization is partly mediated by supply. Furthermore, some of the variation in supply is determined by the distribution of health needs, socio-economic conditions, and past utilization, primarily because funding has been based on these and other variables that have historically determined supply. Simply stated, past utilization influences supply and supply influences current utilization. According to Smith, Sheldon, Carr-Hill, and Martin (1994), no study using methods based solely on utilization can adequately capture variations in health needs that are not reflected — at least partly — in utilization. Regardless of what statistical procedures are used and how well they are adjusted for supply considerations, all utilization-based models remain vulnerable to the possibility that health needs will not be captured in the use of hospitals by patients.

Carr-Hill et al. (1994) stress the importance of the relationship between needs and utilization. They point out that needs can influence use directly or through the effects of supply. Their research shows that consulting patterns in general medical practice are influenced by the effects of age, social class, unemployment, housing status, marital status, and ethnicity. However, a similar relationship between these

factors and utilization of nursing services has not been supported and can, therefore, only be hypothesized. Moreover, in the case of physician consulting patterns, individual characteristics are much more powerful predictors of utilization than is geography. These lessons support the need to guard against generalizing findings from aggregate data to individuals (i.e., ecological fallacy). The authors propose further that the effects of individual socio-economic factors vary according to geographic area. They argue, therefore, that resource allocation methods based on area of residence will always be inferior to an approach that takes into account the characteristics of individual patients.

### *Controlling for Small Area Variations*

In response to these concerns, Carr-Hill et al. (1994) have developed a more sensitive, empirically based model of demand for hospital inpatient facilities in small areas — that is, a method for determining health needs for small geographical areas. The aim of the study was to separate out the effect of supply on use. The authors argue that if supply affects current use and need, then it is inappropriate to use conventional OLS methods to model the determination of use of health services. They suggest that a method such as two-stage least squares is needed to deal with the simultaneous determination of utilization and supply.

To capture the effect of varying availability of health services to small populations, Carr-Hill et al. (1994) created and measured four supply variables: accessibility of public inpatient facilities, general practitioner services, provision of residential and nursing homes, and accessibility of private inpatient facilities. In addition to these supply variables, their acute-care model includes 25 need variables. The model was progressively restricted by omitting variables that were not found to be significant or that had small standardized effects on predictions (i.e., beta coefficients). This process was continued until deletion of another variable would have altered the model significantly. Checks were made to ensure that the statistical tests were well specified. Multilevel modelling techniques were used to account for the hierarchical clustering of errors and to try to distinguish between interdistrict and intradistrict variations.

This model of small area variation shows promise for studies examining the relationship between needs and nursing service utilization. Given that observed levels of utilization and the relationship between levels of utilization and population health needs may be affected by variations in supply (e.g., hospital beds and nurses) between commu-

nities, the relationship between needs and service utilization must be estimated after allowing for small area variation in supply. However, this approach has its limitations, as articulated in studies using small area variation. Fisher, Wennberg, Stukel, and Skinner (2000), for example, examined the relationship between area bed supply and hospital discharge rates. Using Poisson regression (McCullagh & Nelder, 1983), they weighted by the number of subjects in each age-sex-race and zip code stratum, and controlled for all demographic, socio-economic, and health status variables. To measure the relationship between hospital resource measures and mortality, they used logistic regression controlling for the same demographic, socio-economic, and health status variables. Similarly, Coyte and Young (1999) assessed regional variations in the rates of home-care use following inpatient care and same-day surgery in the province of Ontario. Using four measures of regional variation (range in home-care rates, extreme coefficient, weighted coefficient of variation, and systematic component or variation), they found that home-care rates vary considerably by region.

Using the Andersen and Aday (1978) theoretical framework, Hofer, Wolfe, Tedeschi, McMahon, and Griffith (1998) explored the validity of using community-level estimates of socio-economic characteristics as a proxy for individual-level characteristics in adjusting hospitalization rates. They used logistic regression for the analyses of the first two dependent variables and Poisson regression for the count of number of admissions in 1 year. Their work further supports the argument that the small area variation in hospitalization rates depends significantly on socio-economic status (SES) effects, and that community-level measures of variables appear to be reasonable proxies for individual measures. They also reinforce the need to use small area variation (adjustments) in cross-sectional comparisons of small area rates.

Working with a nationally representative sample, Dunlop, Coyte, and McIsaac (2000) carried out a study to explain the role of SES in the differential utilization of publicly funded primary and specialty health services. Specifically, they assessed the extent to which socio-economic barriers exist in the utilization of physician services. A two-stage least squares was incorporated to explain specialist services. In the first stage of the study they assessed access to physician services by comparing the characteristics of those individuals who saw a physician during a 1-year period with those who did not. In the second stage they assessed frequency of physician service utilization by looking at the characteristics of those individuals who saw a physician at least six times in 1 year. They then compared frequent and non-frequent users. Multivariate logistic modelling was employed for four models (at least one GP visit,

six or more GP visits, at least one specialist visit, and six or more specialist visits). Models were initially fit using stepwise regression with a cut-off for inclusion of  $p < 0.05$ . The Wald Statistic was then used to examine each variable and each estimated coefficient was compared with the coefficient from the univariate model containing only that variable. Coefficients were estimated using maximum likelihood estimation. Goodness-of-fit was measured by a generalized coefficient of determination (Cox & Snell, 1990). Moreover, they included only those variables demonstrating a statistically significant association with physician visits.

### **Conclusion**

At a time when nursing shortages are critical, it is important that evidence-based HHRP become a priority of policy-makers and researchers. It is clear that these stakeholders need to consider some critical questions, including: What are the approaches to HHRP that have led to shortages and surpluses in the past? What are the assumptions associated with the different approaches to HHRP and what are their related strengths and limitations? What is the best approach to ensure that a health human resource plan is developed with meaningful numbers, types, and mix of professionals to meet the needs of the population? A population needs-based approach to HHRP would provide policy-makers with the means to develop human resource strategies for meeting the current needs of the population and responding to the changing needs of populations over time. It is imperative that needs-based planning based on solid evidence drive HHRP for nursing.

It is apparent that the theoretical basis of HHRP is underdeveloped. Moreover, the connections between statistical models and the related theoretical frameworks are often not evident. Making these connections explicit will help researchers to uncover and better understand the assumptions that both drive and constrain a particular methodology. Beyond this, it is imperative that researchers devise meticulous strategies to control for variables. In nursing research and health services research, it is essential that models be applied that reflect the hierarchical nature of both conceptual models and data sets. Furthermore, researchers should use specifications of empirical models that enhance rather than limit the capacity of the model to reflect the underlying conceptual frameworks. When working with aggregated data, researchers must be aware that the grouping together of qualitatively heterogeneous individuals to ensure statistically reliable data can be damaging to the testing of theoretical frameworks. Multilevel modelling has been



shown to be useful insofar as it allows for the simulation analysis of individuals and their ecologies. The small area variation model developed by Carr-Hill et al. (1994) holds great promise for researchers hoping to better understand the relationship between health needs and nursing service utilization.

## References

- Andersen, R. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(3), 1–10.
- Andersen, R., & Aday, A. (1978). Access to medical care in the U.S.: Realized and potential. *Medical Care*, 16(4), 533–546.
- Birch, S., Stoddart, G., & Beland, F. (1998). Modelling the community as a determinant of health. *Canadian Journal of Public Health*, 89(6), 402–405.
- Carr-Hill, R., Sheldon, T., Smith, P., Martin, S., Peacock, S., & Hardman, G. (1994). Allocating resources to health authorities: Development of method for small area analysis of use of inpatient services. *British Medical Journal*, 309, 1046–1049.
- Cox, D., & Snell, E. (1990). *The analysis of binary data*. London: Chapman & Hall.
- Coyte, P., & Young, W. (1999). Regional variations in the use of home care services in Ontario, 1993/95. *Canadian Medical Association Journal*, 161(4), 376–383.
- Dickson, G. (2001). *Colleagues in caring: Addressing nursing work force issues*. Newark, NJ: State University of Nursing.
- Duncan, C., Jones, K., & Moon, G. (1993). Do places matter? A multilevel analysis of regional variations in health-related behaviour in Britain. *Social Science and Medicine*, 37, 725–733.
- Dunlop, S., Coyte, P., & McIsaac, W. (2000). Socio-economic status and the utilization of physicians: Results from the Canadian National Population Health Survey. *Social Science and Medicine*, 51, 123–133.
- Evans, R., & Mustard, J. (1995). [Foreword.] *Medical Care*, 33(12), DS5.
- Eyles, J., Birch, S., & Newbold, K.B. (1993). Equity and health care: Analysis of the relationships between need for care and the utilization of nursing services in Canada. *Canadian Journal of Nursing Research*, 25(4), 27–46.
- Eyles, J., Birch, S., & Newbold, K.B. (1995). Delivering the goods? Access to family physician services in Canada: A comparison of 1985 and 1991. *Journal of Health and Social Behavior*, 36(4), 322–332.
- Fisher, E., Wennberg, J., Stukel, T., & Skinner, J. (2000). Associations among hospital capacity, utilization, and mortality of U.S. medicare beneficiaries: Controlling for sociodemographic factors. *Health Services Research*, 34(6), 1351–1362.
- Goldstein, H. (1994). Multi-level cross-classified models. *Sociological Methods and Research*, 22, 364–375.



- Hofer, T., Wolfe, R., Tedeschi, P., McMahon, L., & Griffith, J. (1998). Use of community versus individual socioeconomic data in predicting variation in hospital use. *Health Services Research*, 33(1), 243–259.
- Hughes, J., Tomblin Murphy, G., & Pennock, M. (1998). *Future demand for registered nurses and licensed practical nurses*. Halifax: Province of Nova Scotia, Department of Health.
- Jones, K., & Duncan, C. (1995). Individuals and their ecologies: Analysing the geography of chronic illness within a multilevel modelling framework. *Health and Place*, 1(1), 27–40.
- Lavis, J.N., & Birch, S. (1997). The answer is..., now what was the question? Applying alternative approaches to estimating nurse requirements. *Canadian Journal of Nursing Administration*, 10(1), 24–44.
- Markham, B., & Birch, S. (1997). Back to the future: A framework for estimating health-care human resource requirements. *Canadian Journal of Nursing Administration*, 10(1), 7–23.
- McCullagh, P., & Nelder, J. (1983). *Generalized regression models*. New York: Chapman & Hall.
- Newbold, B., Eyles, J., Birch, S., & Spencer, A. (1998). Allocating resources in health care: Alternative approaches to measuring needs in resource allocation formula in Ontario. *Health and Place*, 4(1), 79–89.
- O'Brien-Pallas, L. (1998). *Health human resources: An analysis of forecasting models*. Ottawa: Canadian Nurses Association.
- O'Brien-Pallas, L., Birch, S., Baumann, A., & Tomblin Murphy, G. (2000). Integrating workforce planning, human resources and service planning. Geneva: World Health Organization.
- Pedhazur, E., & Schmelkin, L. (1991). *Measurement, design, and analysis: An integrated approach*. Mahwah, NJ: Erlbaum.
- Pong, R.W. (1997). Towards developing a flexible health workforce: A conference background paper. *Canadian Journal of Medical Radiation Technology*, 28(1), 11–18.
- Roos, N., Black, C., Frohlich, N., Decoster, C., Cohen, M., Tataryn, D., Mustard, C., Toll, F., Carriere, K., Burchill, C., MacWilliam, L., & Bogdanovic, B. (1995). A population based health information system. *Medical Care*, 33(12), DS13–20.
- Sechchrist, K., Lewis, E., & Rutledge, D. (1999). *The California Nursing Workforce Initiative: Planning for California's work force. Phase II: Final report*. Irvine: University of California.
- Smith, P., Sheldon, T., Carr-Hill, R., & Martin, S. (1994). Allocating resources to health authorities: Results and policy implications of small area analysis of use of inpatient services. *British Medical Journal*, 309(6961), 1050–1057.
- Sutton, M., Carr-Hill, R., Gravelle, H., & Rice, N. (1999). Do measures of self-reported morbidity bias the estimation of the determinants of health care utilisation? *Social Science and Medicine*, 49(7), 867–878.

### **Author's Note**

I acknowledge the significant contributions of my PhD committee (Stephen Birch, Irv Rootman, Dot Pringle, and Gerarda Darlington) throughout my doctoral studies. My comprehensive examinations were the basis for this manuscript. I thank my supervisor, Dr. Linda Lee O'Brien-Pallas, for her guidance and support throughout my doctoral studies. Her insight in this area of HHRP has guided my thinking. Support from the following funding agencies has been critical to my work: Canadian Health Services Research Foundation, Ontario Ministry of Health and Long-Term Care, Nova Scotia Health Research Foundation, and Canadian Institutes of Health Research. I am forever grateful to a colleague who reviewed the manuscript during its development. I also wish to thank my two anonymous reviewers for their thoughtful comments and constructive suggestions.

Correspondence may be sent to: Gail Tomblin Murphy, School of Nursing, Dalhousie University, 5869 University Avenue, Halifax NS B3H 3J5 Canada. E-mail: <Gail.Tomblin.Murphy@dal.ca>.

## Nursing-Related Determinants of 30-Day Mortality for Hospitalized Patients

Ann E. Tourangeau, Phyllis Giovannetti,  
Jack V. Tu, and Marilyn Wood

La présente étude visait à préciser l'incidence de variables liées aux soins infirmiers sur le taux de mortalité sur trente jours chez les hospitalisés. On a effectué une analyse rétrospective dans le but de tester le *30-Day Mortality Model* [Modèle de mortalité sur trente jours]. L'échantillon comprenait 75 hôpitaux de soins actifs situés dans la province de l'Ontario, au Canada. Les taux de mortalité hospitalière ont été établis à partir de 46 941 malades sortants qui avaient reçu un diagnostic confirmé d'infarctus aigu du myocarde, d'accident vasculaire cérébral, de pneumonie ou de septicémie. Des variables indépendantes relativement aux soins infirmiers en hôpital ont été élaborées à partir de 3998 réponses obtenues par le biais du *Ontario Registered Nurse Survey of Hospital Characteristics* [Questionnaire sur les caractéristiques des hôpitaux de l'Association des infirmières autorisées de l'Ontario]. Les résultats confirment l'existence d'un lien entre le taux de mortalité sur trente jours et trois variables indépendantes : l'éventail des compétences en matière de soins infirmiers, le nombre d'années d'expérience au sein d'un service donné et le nombre de quarts de travail manqués. Ces conclusions pourraient servir à prévoir l'incidence des changements effectués en matière de compétences et d'années d'expérience des infirmières autorisées dans les hôpitaux sur le taux de mortalité hospitalière.

The purpose of this study was to further our understanding of the effects of nursing-related hospital variables on 30-day mortality rates for hospitalized patients. A retrospective design was used to test the proposed 30-Day Mortality Model. The sample consisted of 75 acute-care hospitals in the province of Ontario, Canada. To develop hospital mortality rates, 46,941 patients discharged from these hospitals who had a most responsible diagnosis of acute myocardial infarction, stroke, pneumonia, or septicemia were included. To develop hospital-level nursing predictor variables, 3,998 responses to the Ontario Registered Nurse Survey of Hospital Characteristics were also included.

---

*Ann E. Tourangeau, RN, PhD, is Assistant Professor, Faculty of Nursing, University of Toronto, and Adjunct Scientist, Institute for Clinical Evaluative Sciences, Toronto, Ontario, Canada. Phyllis Giovannetti, RN, ScD, is Professor, Faculty of Nursing, University of Alberta, Edmonton, Canada. Jack V. Tu, MD, PhD, FRCPC, is Senior Scientist, Institute for Clinical Evaluative Sciences, Associate Professor, Department of Medicine, Health Administration and Public Health Sciences, University of Toronto, and Staff Physician, Division of General Internal Medicine, Sunnybrook and Women's College Health Sciences Centre, Toronto. Marilyn Wood, RN, PhD, is Professor, Faculty of Nursing, University of Alberta.*

The findings support a relationship between lower 30-day mortality and 3 predictors: a richer registered nurse skill mix, more years of experience on the clinical unit, and reported larger number of shifts missed. These findings can be used to predict the effects of hospital changes in nursing skill mix and years of RN experience on patient mortality.

Hospital mortality rates are important indicators of the quality of hospital care, yet little is known about relationships between nursing-related hospital variables and mortality rates. It has been suggested that mortality is not sensitive to nursing-related hospital variables (Mitchell & Shortell, 1997). However, it has also been suggested that determination of the relationships between patient mortality and nursing care is an essential mandate of nurse researchers, as hospital care is reserved for the most critically ill and unstable patients, who are hospitalized primarily because of their need for nursing care (Aiken, Sochalski, & Lake, 1997).

As health-care spending across North America was increasing at unsustainable rates throughout the 1980s, health-care leaders searched for strategies to decrease total hospital spending. Nursing services, as the single largest hospital operating expense, became a vulnerable target (Aiken, Sochalski, & Anderson, 1996; O'Brien-Pallas, Giovannetti, Peereboom, & Marton, 1995). There was little evidence to use in understanding or predicting the effects of changing the number of nursing-care hours, the skill mix of nursing staff, or the clinical resources available to support hospital nurses, and thus to use in counteracting such cost-cutting strategies. These strategies, sometimes veiled as quality improvement initiatives, involved changes in the nature and condition of nursing practice environments; displacement of nursing staff from existing as well as closed units; decreases in the number of registered nurse (RN) patient-care hours; weakening of the skill mix of nursing staff by eliminating or substituting RN patient-care hours; and elimination of clinical resources such as clinical nurse specialists, nurse educators, and nurse managers. The potential effects of these strategies on patient outcomes such as mortality were unknown.

### **Literature Review**

This review will briefly describe hospital variables identified in the research literature as being associated with patient mortality. Our understanding of the condition of hospital nursing practice environments has come largely from magnet hospital research. In 1982, a task force of the American Academy of Nursing Fellows was struck to explore why some hospitals, termed magnets, were more successful than others in retaining and recruiting RNs during a period of nursing

shortages. In this initial descriptive study, the following characteristics were found in a sample of 41 American magnet hospitals: visionary nurse leaders who supported nursing staff development, decentralized administrative structures, employment of clinical experts, and RNs who had autonomy and control over their practice settings as well as collaborative relationships with physicians (McClure, Poulin, Sovie, & Wandelt, 1983).

A few years later, Kramer and Schmalenberg (1988a, 1988b) studied a sample of 16 of the original 41 hospitals to determine whether magnet hospitals shared the characteristics of innovative and “excellent” companies. They concluded that the 16 magnet hospitals had almost all of the characteristics of excellent companies. Concurrently, Kramer (1990) conducted telephone interviews with the chief nursing officers of the 16 hospitals. She reported that they continued to move towards richer RN skill mixes, experienced almost no nursing shortages, and fostered greater RN autonomy. Kramer and Schmalenberg (1991a, 1991b) also surveyed nurses from known magnet hospitals and nurses-at-large to explore influences on nurse job satisfaction. The nurses from magnet hospitals reported more job satisfaction, better staffing in their hospitals, and more discretionary power within their clinical units.

Until the 1990s, magnet hospital research focused on understanding the concept of magnetism in hospitals. The first study examining patient outcomes in magnet versus non-magnet hospitals looked at differences in 30-day mortality rates with a sample of 234 American hospitals, 39 magnet and 195 non-magnet (Aiken, Smith, & Lake, 1994). Magnet hospitals were found to have five fewer patient deaths per 1,000 Medicare patients discharged than non-magnet hospitals.

We located only 10 additional studies examining some aspect of nursing-related hospital factors and patient mortality. Knaus, Draper, Wagner, and Zimmerman (1986) found evidence of a relationship between low patient mortality and high levels of both nurse-physician collaboration and workplace nursing educational support. Three years later, Mitchell, Armstrong, Simpson, and Lentz (1989) found relationships among high nurse-physician collaboration, high levels of nurse expertise, and low mortality rates. However, several years later, Shortell et al. (1994) found no evidence of a relationship between nurse-physician collaboration and risk-adjusted mortality.

The research literature yields mixed findings on the relationship between nurse dose (number of nursing-care hours) and mortality rates and between nursing skill mix (number of RNs proportionate to other nursing staff) and mortality rates. Shortell and Hughes (1988) found no



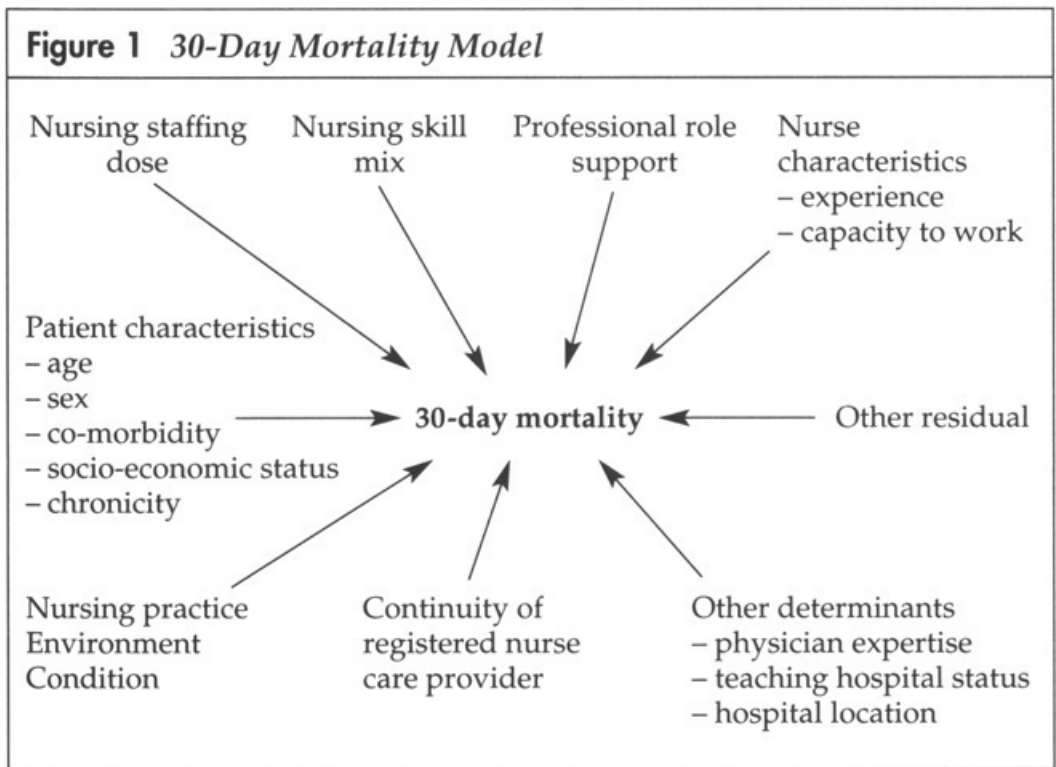
statistically significant relationship between number of RNs proportionate to other nursing staff and mortality rates. One year later, Hartz et al. (1989) found a high proportion of RNs to be strongly associated with lower adjusted mortality rates. Farley and Ozminkowski (1992), in a study of changes in the volume of diagnostic groups over time, found the ratio of full-time-equivalent RNs to inpatient day to be inversely and significantly associated with adjusted mortality rates. At around the same time, Manheim, Feinglass, Shortell, and Hughes (1992) found a higher number of RNs per adjusted patient admission to be a negative predictor of Medicare 30-day post-admission mortality. Schultz (1997) reported similar findings of an inverse relationship between RNs per patient day and risk-adjusted hospital mortality rates for acute myocardial infarction patients in a sample of California hospitals. Yet Shortell et al. (1994) found no statistically significant association between nursing skill mix and risk-adjusted mortality. Similarly, Blegen, Goode, and Reed (1998) reported that although they found a high proportion of RNs (up to 87.5% of all nursing staff) to be associated with low mortality, this finding was directional and not statistically significant. More recently, Lake (1999) explored relationships, in 42 American hospitals, between 30-day mortality rates and nursing skill mix, nurse-patient ratios, and six nursing environment constructs developed from the revised Nursing Work Index (e.g., adequacy of staff and support services, collaboration between physicians and nurses). Lake found evidence to support bivariate relationships between 30-day mortality and both nurse-patient ratios and several of the nursing environment constructs. However, in the final multiple regression models, which included all nursing and hospital predictors, none of the nursing-related variables were found to be significant predictors of 30-day mortality.

In summary, there is conflicting research evidence concerning the relationship between nursing-related hospital characteristics and hospital mortality rates. Furthermore, the trustworthiness of some of the findings is compromised by failure to use adequate risk-adjustment methods that account for differences arising from variations in patient characteristics across hospitals. The objective of this study was to empirically determine the effects of nursing-related hospital variables on risk-adjusted 30-day post-admission mortality rates in a sample of acute-care hospitals in the province of Ontario.

### **Theoretical Model**

The theoretical framework guiding this study was the 30-Day Mortality Model (see Figure 1). This model was developed from the mortality





research literature, including the work of a group of researchers at the University of Pennsylvania (Aiken et al., 1997; Havens & Aiken, 1999). We hypothesized that hospital mortality is a sensitive measure of quality of care and that some hospitals are better able than others to prevent unnecessary patient deaths because they can more promptly detect and intervene with serious patient complications that could lead to death. Because of their continuous presence with hospitalized patients, RNs with the appropriate knowledge and skills are vital to both early detection and effective intervention with serious patient complications. Within this model, we hypothesized that the following hospital variables are related to lower mortality rates because each one increases a hospital's ability to prevent unnecessary patient deaths:

- higher dose of nurse staffing (greater number of nursing-care hours)
- richer RN skill mix
- more availability of professional role support resources for nursing staff
- more years of RN experience on the clinical unit
- fewer shifts missed by RNs (increased nurse capacity to work)
- higher reported levels of professional nursing practice environment
- increased opportunities for continuity of care (higher proportion of full-time RNs)

Because the research literature shows evidence of a relationship between 30-day mortality and physician expertise, hospital teaching status, and hospital location (Aiken et al., 1994; Farley & Ozminkowski, 1992; Hartz et al., 1989; Manheim et al., 1992), these concepts were included as predictors in the 30-Day Mortality Model. The research question addressed was: *How well do the predictor variables in the 30-Day Mortality Model explain differences in 30-day medical mortality rates among Ontario acute-care hospitals?*

## Methods

### *Design and Sample*

A retrospective design was used. The unit of analysis was the hospital, and the sample consisted of 75 acute-care teaching and community hospitals operating in Ontario during the 1998–99 fiscal year. To enhance homogeneity, small hospitals were excluded. The sample consisted of 10 teaching and 65 community hospitals.

To develop 30-day mortality rates for each hospital, only patients who were at least 20 years of age and had a most responsible diagnosis of acute myocardial infarction, stroke, pneumonia, or septicemia were included. These four medical conditions were chosen because they are acute rather than chronic, have high patient volumes, and have high crude death rates. To promote homogeneity of patients, the most responsible diagnosis had to be the initial reason for hospitalization. To avoid multiple counting of patients, patients transferred from other acute-care hospitals were excluded. Patients with a pre-admission or secondary diagnosis of cancer, palliative care, or immune-deficiency disease were excluded, as the disease trajectories and health goals of these patients may be different from those of patients experiencing acute disease processes. The final sample consisted of 46,941 patients discharged from the 75 sample hospitals; they accounted for 4% of all patients discharged from Ontario acute-care hospitals in the period April 1, 1998, through March 31, 1999.

The responses of 3,988 medical-surgical nurses working in the 75 hospitals who responded to the Ontario Registered Nurse Survey of Hospital Characteristics were used to develop several hospital nursing-related variables. The survey was completed in fall 1998/winter 1999 as part of an international study, Outcomes of Hospital Staffing. A modified random sample of 15,438 RNs working in Ontario acute-care

hospitals were sent the survey. The completed survey response rate was 57% (Tibert, 1999). Ethical approval for this study was obtained from the Capital Health Region Ethics Review Panel, Edmonton, Alberta, in January 2000 and was renewed in February 2001.

### *Study Variables*

*The 30-day risk-adjusted mortality rate* reflects the proportion of patients admitted to hospital who die within 30 days of admission regardless of whether the death occurred in hospital or after discharge. Rates were calculated for each hospital over the period April 1, 1998, through March 31, 1999. The general form of the risk-adjusted 30-day mortality rate was the ratio of observed deaths divided by the expected number of deaths. For between-hospital comparisons to be valid, mortality rates must be adjusted for patient differences among hospitals. Differences in mortality rates that persist after effective risk-adjustment are usually attributed to differences in quality of care among hospitals (Iezzoni, 1997; Shwartz, Ash, & Iezzoni, 1997). Each patient's probability of death was estimated using four logistic regression models (one for each diagnostic group) and summed to calculate a hospital's expected number of deaths. The following risk factors were included as predictors of death in each logistic regression model: age, sex, 14 categories of pre-existing co-morbid conditions, an indicator of socio-economic status, and a chronicity of health indicator. All four logistic regression models performed well in predicting death, with c-statistics ranging from 0.71 to 0.76. A c-statistic between 0.70 and 0.80 is considered evidence of acceptable discrimination power of a logistic regression model (Hosmer & Lemeshow, 2000). A detailed description of the method used to develop risk-adjusted 30-day mortality rates can be found elsewhere (Tourangeau, 2001).

*Nurse staffing dose* for each hospital was measured as the total inpatient clinical nursing worked hours per Ontario case weight (OCW). Ontario case weight is a measure of relative total resource consumption by patients; it is a refinement of the American-derived resource intensity weights. "Worked hours" are unit-producing hours worked by nursing staff in providing care, excluding benefit hours. The denominator is the sum of OCWs for all patients discharged from each hospital from April 1, 1998, through March 31, 1999.

*Nursing skill mix* was calculated as RN inpatient earned hours proportionate to other inpatient nursing staff earned hours (RN, registered practical nurse, and unlicensed assistive personnel earned hours).

*Availability of professional role support* was estimated as the mean hospital score of medical-surgical nurse respondents on the Ontario Nurse Survey to the following item: "In my hospital there is the opportunity for staff nurses to consult with clinical nurse specialists or expert nurse clinicians/educators" (1 = strongly disagree; 4 = strongly agree).

*Years of RN experience on the clinical unit* was calculated as the mean hospital response by medical-surgical nurses to the Ontario Nurse Survey item on number of years employed on the current clinical unit.

*Nurse capacity to work* was estimated as the mean hospital response by medical-surgical nurses to the Ontario Nurse Survey item on number of shifts missed in the preceding 3 months.

*Condition of nursing practice environment* was estimated as the mean hospital score of medical-surgical nurses to the Ontario Nurse Survey on the Canadian Practice Environment Index (CPEI). The CPEI is a 26-item one-factor scale derived from the revised Nursing Work Index (NWI-R) through a process of exploratory principal component analysis. Items with loadings above 0.50 were included (Estabrooks et al., submitted). For each item, respondents were asked to select an answer on a four-point continuum (1 = strongly disagree; 4 = strongly agree). The possible theoretical range of CPEI scores was 26 to 104. The higher the score, the more nurses reported the existence of a professional nursing practice environment in their hospital. There was strong evidence of internal consistency reliability with use of the CPEI in this study (Cronbach's  $\alpha = 0.90$ ). Evidence of criterion-related validity was found for the CPEI, with correlations ranging from 0.58 to 0.85 ( $p < 0.0001$ ) between the CPEI and three other previously used subscales of the NWI-R: nurse autonomy, nurse control over the practice setting, and nurse relationships with physicians.

*Continuity of care* was estimated for each hospital as the number of full-time inpatient RN earned hours proportionate to other RN earned hours (including full-time, part-time, and casual RN earned hours).

*Physician expertise* for each hospital was measured as the proportion of physicians who were general practitioners rather than specialists and who were the most responsible physician for the most responsible diagnosis of patients in the sample.

*Hospital status and location.* A dummy indicator variable was created to identify teaching hospitals as designated by the Ontario

Council of Teaching Hospitals. All 10 of the hospitals so identified were located in urban areas (population greater than 100,000). Two dummy indicator variables were created to identify community hospitals as located either in an urban area or outside an urban area; 25 were identified as urban, 40 as non-urban.

### *Data Sources, Management, and Analysis*

Three sources of data were used to develop the 30-day risk-adjusted mortality outcome: the Discharge Abstract Database (DAD) 1998–99 from the Ontario Ministry of Health and Long- Term Care, the Ontario Registered Persons Database (RPDB), and the Statistics Canada 1996 Population Data file containing average-income information. The DAD file describes all patients discharged from Ontario hospitals. The RPDB contains death-date information and was linked with the DAD file using scrambled Ontario health insurance numbers. The Statistics Canada 1996 Population Data information was linked to each discharged patient by postal code to estimate the socio-economic status of sample patients.

Two sources of data were used to develop the independent hospital nursing variables: the Ontario Registered Nurse Survey of Hospital Characteristics and the Ontario Hospital Reporting System (OHRS) 1998–99 file and its appendices. Individual medical-surgical nurse responses were aggregated to the hospital level to develop nursing variables (availability of professional role support, experience on the clinical unit, number of shifts missed, and condition of the nursing practice environment). For each hospital, the OHRS file contains information about the dose of nurse staffing, nursing skill mix, and continuity of RN care provider.

The source of data used to develop the physician expertise variable was the DAD 1998–99 file. The teaching hospital status variable was developed from the list of teaching hospitals identified by the Ontario Council of Teaching Hospitals. The Statistics Canada Census 1996 Population Statistical Profiles of Canadian Communities file was used to develop the indicator for hospital location: within or outside of an urban area.

All data were managed using the UNIX system at the Institute for Clinical Evaluative Sciences in Toronto, Ontario. All analyses were conducted using SAS® Version 8. Multiple regression models were completed to answer the research question.

Results

The mean risk-adjusted mortality rate for the 75 sample hospitals was 15.03 (*SD* = 2.28) and ranged from 10.53 to 21.53. Teaching hospitals on average had the lowest risk-adjusted mortality rate, 14.02 (*SD* = 1.29). Urban community hospitals had a mean risk-adjusted mortality rate of 15.05 (*SD* = 2.21). On average, non-urban community hospitals had the highest risk-adjusted mortality rate, 15.27 (*SD* = 2.48). Table 1 contains descriptive statistics for each of the nursing-related predictor variables for all hospitals and separately for teaching, urban community, and non-urban community hospitals. Table 2 contains a correlation matrix of the nursing-related predictor variables and 30-day mortality rate.

**Table 1** *Nursing-Related Predictor Variables*

Variable	Mean (SD): All Hospitals (N = 75)	Mean (SD): Teaching Hospitals (N = 10)	Mean (SD): Urban Community Hospitals (N = 25)	Mean (SD): Non-Urban Community Hospitals (N = 40)
Nurse staffing dose: inpatient clinical worked hours per OCW	39.92 (7.5)	41.61 (10.70)	36.36 (5.30)	41.73 (7.10)
Skill mix: proportion of RN staffing	0.75 (0.11)	0.85 (0.09)	0.79 (0.09)	0.71 (0.10)
Availability of professional role support	2.20 (0.53)	2.84 (0.14)	2.39 (0.38)	1.92 (0.48)
Years of RN experience on clinical unit	9.06 (2.0)	7.85 (1.00)	8.89 (1.80)	9.47 (2.20)
RN capacity to work: average number of shifts missed in previous 3 months	1.54 (0.80)	1.81 (0.41)	1.65 (0.70)	1.41 (0.92)
Condition of nursing practice environment: CPEI*	61.90 (4.0)	63.20 (3.30)	61.70 (3.90)	61.80 (4.20)
Continuity of care: proportion of full-time RN earned hours	0.59 (0.10)	0.67 (0.06)	0.62 (0.11)	0.55 (0.08)
* Canadian Practice Environment Index.				



<b>Table 2</b> <i>Correlations among Continuous Predictor Variables and 30-Day Mortality with the Associated Probabilities</i>								
	ND	SM	RS	YX	CW	CPEI	CC	PE
ND	1.00							
SM	-0.47 <i>p</i> < 0.0001	1.00						
RS	-0.41 <i>p</i> = 0.0003	0.53 <i>p</i> < 0.0001	1.00					
YX	-0.08 <i>p</i> = 0.47	-0.12 <i>p</i> = 0.29	-0.11 <i>p</i> = 0.33	1.00				
CW	-0.05 <i>p</i> = 0.66	-0.04 <i>p</i> = 0.75	0.08 <i>p</i> = 0.50	-0.25 <i>p</i> = 0.03	1.00			
CPEI	-0.12 <i>p</i> = 0.32	0.20 <i>p</i> = 0.08	0.41 <i>p</i> = 0.0003	0.06 <i>p</i> = 0.60	-0.16 <i>p</i> = 0.18	1.00		
CC	-0.06 <i>p</i> = 0.61	0.39 <i>p</i> = 0.001	0.33 <i>p</i> = 0.004	-0.14 <i>p</i> = 0.24	0.21 <i>p</i> = 0.07	-0.10 <i>p</i> = 0.39	1.00	
PE	0.24 <i>p</i> = 0.04	-0.51 <i>p</i> < 0.0001	-0.59 <i>p</i> < 0.0001	0.28 <i>p</i> = 0.02	-0.35 <i>p</i> = 0.00	-0.09 <i>p</i> = 0.45	-0.45 <i>p</i> < 0.0001	1.00
30	0.21 <i>p</i> = 0.07	-0.21 <i>p</i> = 0.07	-0.18 <i>p</i> = 0.11	-0.20 <i>p</i> = 0.08	-0.30 <i>p</i> = 0.01	-0.08 <i>p</i> = 0.50	-0.17 <i>p</i> = 0.16	0.19 <i>p</i> = 0.11
ND = nursing dose SM = skill mix RS = availability of role support for nurses YX = years of experience on the clinical unit CW = nurse capacity to work CPEI = Canadian Practice Environment Index (condition of nursing practice environment) CC = continuity of registered nurse care provider PE = physician expertise 30 = 30-day mortality rate.								

A series of five multiple regression models was completed to answer the research question. Each model builds on the findings of the previous models. Only the results for the fifth and final model are discussed in this paper. Detailed descriptions of these analyses are described elsewhere (Tourangeau, 2001). In all multiple regression models, the predictor “hospital location outside an urban area” was left out of the model as the reference group for hospital type and location.

In the first four models, using either stepwise or forced-entry multiple regression procedures, the following three statistically significant predictors of 30-day mortality were found: years of nurse experience in the clinical unit, nursing skill mix, and nurse capacity to work. No other hypothesized predictor variables in the 30-Day Mortality Model were found to be statistically significant. Interaction terms were included to

determine whether the effectiveness of these significant predictors of 30-day mortality was the same across hospital types: teaching, urban community, and non-urban community. In the first four multiple regression models, the effectiveness of only nursing skill mix was the same across hospital types. Therefore, interaction terms were not included in the final multiple regression model for nursing skill mix. The addition of interaction variables in the multiple regression models provides more detailed information on the effectiveness of the predictor of 30-day mortality in various hospital contexts and is a useful strategy for testing and refining theory. The following variables were forced-entered into the final multiple regression model: nursing skill mix, years of nurse experience on the clinical unit in [multiplied by] non-urban community hospitals, years of experience on the clinical unit in [multiplied by] teaching hospitals, years of experience on the clinical unit in [multiplied by] urban community hospitals, nurse capacity to work in [multiplied by] non-urban community hospitals, nurse capacity to work in [multiplied by] teaching hospitals, and nurse capacity to work in [multiplied by] urban community hospitals. Table 3 lists the results of the final multiple regression model: the predictor variables, their parameter estimates, the associated  $F$  statistics, and the  $p$  values. The proportion of 30-day mortality rate variance explained was 0.32 ( $p = 0.0004$ ). The results of this final model are interpreted as:

- The mean risk-adjusted 30-day mortality rate for all sample hospitals was 15% (150/1,000 patients discharged).
- A 10% increase in the proportion of RNs across all hospital types was associated with five fewer patient deaths for every 1,000 discharged patients.
- In non-urban community hospitals, each additional hospital mean year of nurse experience on the clinical unit was associated with four fewer patient deaths for every 1,000 discharged patients.
- In urban community hospitals, each additional hospital mean year of nurse experience on the clinical unit was associated with six fewer patient deaths for every 1,000 discharged patients.
- In non-urban community hospitals *only*, each additional hospital mean shift missed by nurses (less capacity to work) was associated with 15 fewer patient deaths for every 1,000 discharged patients.

The mean hospital years of experience on the clinical unit was inversely related to 30-day mortality rates in both urban and non-urban community hospitals, though the effect size was larger in the former. For teaching hospitals, the effect size was almost as large as that for urban community hospitals but was not statistically significant because of the

<b>Table 3</b> <i>Final Multiple Regression Results: Statistically Significant Predictors and 4 Related Interaction Terms Forced to Enter Model</i>			
Variable	Parameter Estimate	F statistic	P value
Nursing skill mix	-0.0489	-1.97	0.04
Years of clinical unit experience for non-urban community hospitals	-0.0035	-2.83	0.01
Years of clinical unit experience for teaching hospitals	-0.0052 *	2.59	0.11
Years of clinical unit experience for urban community hospitals	-0.0061	15.16	0.0002
Capacity to work for non-urban community hospitals	-0.0149	-4.35	< 0.0001
Capacity to work for teaching hospitals	-0.0100 *	0.60	0.44
Capacity to work for urban community hospitals	0.0006 *	0.01	0.91
<i>Note:</i> model R square = 0.32; overall model F value = 4.50; <i>p</i> = 0.0004; * refers to parameter estimate that is not significantly different from 0.00.			

small number of teaching hospitals in the sample. Capacity of nurses to work (number of reported missed shifts in the preceding 3 months) was significantly associated with 30-day mortality in non-urban community hospitals *only*.

Discussion

In this study, a richer skill mix of RNs was found to be associated with lower 30-day mortality, while the dose of nurse staffing was not found to be associated with 30-day mortality. Only one of the studies reviewed had found a statistically significant relationship between nursing skill mix and mortality (Hartz et al., 1989). In two of the studies reviewed, it was noted that their measures of nurse staffing dose and nursing skill mix were highly correlated (Blegen et al., 1998; Hartz et al.). We too found a moderate correlation ( $r = -0.47$ ;  $p < 0.0001$ ) between

our indicators of nursing skill mix and nurse staffing dose. If correlated variables are included in a regression analysis, one of the correlated variables may be eliminated from the analysis unless a forced-entry procedure is used.

No evidence was found to support a relationship between the amount of professional role support for hospital nursing staff and 30-day mortality, though two earlier studies (Aiken et al., 1994; Knaus et al., 1986) did find such a relationship. This present finding might be a result of the crude proxy variable used to measure the amount of professional role support in sample hospitals.

The average number of years of experience by RNs on their clinical units was significantly and inversely related to 30-day mortality in the majority of hospitals. No other studies could be found that investigated such a relationship. It is reasonable to expect that the more experience nurses have with the patient population on their unit, the more prepared they will be to assess and intervene effectively with serious complications and thus prevent unnecessary deaths. Over the past decade, the re-organization activities undertaken by many hospitals may have disrupted the tenure of or accumulation of experience by RNs on their units. Some re-organization strategies have involved the elimination and reduction of RN positions, substitution of RNs with less qualified nursing personnel, and closure of clinical units. The process of eliminating and substituting RNs has often involved moving them from one unit to another through bumping. Registered nurses may have been moved from a unit in which they had developed clinical expertise to a unit with a patient population of whom they had limited knowledge and experience. Our findings suggest that hospital re-organization activities that resulted in fewer years of RN experience on their clinical unit contributed to excessive or unnecessary patient mortality.

Greater nurse capacity to work and fewer shifts missed were found to be associated with higher 30-day mortality rates in non-urban community hospitals. When nurses in these hospitals missed more shifts, fewer patients died. This unexpected relationship is difficult to explain. It might be related to other characteristics of nurses and hospitals in non-urban areas. As shown in Table 1, non-urban community hospitals have the least mean number of missed shifts by nurses, the lowest proportion of RNs in their nursing skill mix, the least amount of professional role support resources available to support nursing practice, and the lowest proportion of full-time RN staff. It is possible that these characteristics together exert a direct influence on nurses' capacity to work and the ability of nurses in non-urban community hospitals to coordi-

nate, plan, and communicate patient care. It is possible that nurses cope effectively with workplace pressures by taking non-scheduled time away from work to recuperate and regain the capacity to work. Nurses in non-urban community hospitals may not be taking adequate time to recuperate and regain their capacity to work, possibly resulting in less effective detection and intervention with serious patient complications and contributing to higher 30-day mortality rates.

Though a weak association between the condition of the nursing practice environment and mortality was found in previous studies (Aiken et al., 1994; Lake, 1999), no evidence of an association was found in the present study. This may be because the association is not a direct one. The condition of the nursing environment may be a mediating factor that is itself affected by predictor variables such as nursing skill mix and nurse staffing dose.

Replication and refinement of the model is an important next step in theory development. In the 30-Day Mortality Model, each of the predictors was hypothesized to have a direct effect on the outcome. Some of these variables may exert indirect and reciprocal effects on 30-day mortality. To test total effects of the predictors, rather than direct effects only, we believe that analysis strategies such as structural equation modelling may be more appropriate (Hayduk, 1987).

This study had a number of limitations. When a researcher is unable to manipulate or control study variables in retrospective studies such as this, alternative explanations threaten the validity of claims made about relationships between outcomes and predictor variables. Because the model accounted for only 32% of the variance in 30-day risk-adjusted mortality among hospitals, there clearly were other determinants, unknown and unspecified, of 30-day mortality. Another limitation was the potential introduction of sources of measurement error, particularly associated with the use of secondary data sources. Data may have both systematic and random sources of error that affect both the reliability and validity of the findings. There is evidence of errors, particularly random errors, with patient data extracted from the Discharge Abstract Database (Hawker, Coyte, Wright, Paul, & Bombardier, 1997; Malenka, McLerran, Roos, Fisher, & Wennberg, 1994; Mayo, Danys, Carlton, & Scott, 1993). These errors may inflate standard errors of estimates and ultimately diminish the credibility of the results. Little is known about the reliability of the OHRS files. Similarly, responses in the Ontario Nurse Survey may contain sources of error. No tests of stability were undertaken with the Ontario Nurse Survey and the degree of error in survey responses is unknown.



Caution should be exercised in generalizing these results across different diagnostic groups in Ontario hospitals, as the sample consisted only of patients with acute myocardial infarction, stroke, pneumonia, and septicemia. When other diagnostic groups are studied, not only will the 30-day mortality rate for hospitals change, but the rankings of 30-day mortality rates among hospitals may also change. Further replication research is needed with other diagnostic groups. Generalization outside the province of Ontario should be done with caution. Policies governing the funding and organization of hospitals are a provincial responsibility and may result in different hospital environments outside Ontario.

Hospital administrators, funding organizations, and health policy-makers may find the results of this study useful. The findings suggest that at least two aspects of the organization of nursing in acute-care hospitals — nursing skill mix and nurses' years of experience in their clinical units — have a direct effect on 30-day mortality. If hospitals are considering strategies that will change nursing skill mix or years of experience on clinical units, these findings can be used to estimate the effects of the changes on 30-day mortality. The findings also have implications for the decision of hospitals and collective bargaining units to displace nursing staff in times of perceived over-supply, and they shed doubt on the appropriateness of bumping, a common practice in the management of nurses in hospitals.

## References

- Aiken, L.H., Smith, H.L., & Lake, E.T. (1994). Lower Medicare mortality among a set of hospitals known for good nursing care. *Medical Care*, 32(8), 771-787.
- Aiken, L.H., Sochalski, J., & Anderson, G. (1996). Downsizing the hospital nursing workforce. *Health Affairs*, 15(4), 88-92.
- Aiken, L.H., Sochalski, J., & Lake, E.T. (1997). Studying outcomes of organizational change in health services. *Medical Care*, 35(11), NS6-18.
- Blegen, M.A., Goode, C.J., & Reed, L. (1998). Nurse staffing and patient outcomes. *Nursing Research*, 47(1), 43-50.
- Estabrooks, C.A., Tourangeau, A., Humphrey, C.K., Hesketh, K., Giovannetti, P., Clarke, H., Acorn, S., Wong, J., & Shamian, J. (submitted). *Measuring the hospital practice environment: A Canadian context*.
- Farley, D.E., & Ozminkowski, R.J. (1992). Volume-outcome relationships and inhospital mortality: The effect of changes in volume over time. *Medical Care*, 30(1), 77-94.
- Hartz, A.J., Krakauer, H., Kuhn, E.M., Young, M., Jacobsen, S.J., Gay, G., Muenz, L., Katzoff, M., Bailey, R.C., & Rimm, A.A. (1989). Hospital characteristics and mortality rates. *New England Journal of Medicine*, 321(25), 1720-1725.

- Havens, D.S., & Aiken, L.H. (1999). Shaping systems to promote desired outcomes: The magnet hospital model. *Journal of Nursing Administration*, 29(2), 14-20.
- Hawker, G.A., Coyte, P.C., Wright, J.G., Paul, J.E., & Bombardier, C. (1997). Accuracy of administrative data for assessing outcomes after knee replacement surgery. *Journal of Clinical Epidemiology*, 50(3), 265-273.
- Hayduk, L.A. (1987). *Structural equation modeling with LISREL: Essentials and advances*. Baltimore: Johns Hopkins University Press.
- Hosmer, D.W., & Lemeshow, S. (2000). *Applied logistic regression* (2nd ed.). New York: Wiley.
- Iezzoni, L.I. (1997). The risks of risk adjustment. *Journal of the American Medical Association*, 278(19), 1600-1607.
- Knaus, W.A., Draper, E.A., Wagner, D.P., & Zimmerman, J.E. (1986). An evaluation of outcomes from intensive care in major medical centers. *Annals of Internal Medicine*, 104, 410-418.
- Kramer, M. (1990). The magnet hospitals: Excellence revisited. *Journal of Nursing Administration*, 20(9), 35-44.
- Kramer, M., & Schmalenberg, C. (1988a). Magnet hospitals: Institutions of excellence. Part I. *Journal of Nursing Administration*, 18(1), 13-24.
- Kramer, M., & Schmalenberg, C. (1988b). Magnet hospitals: Institutions of excellence. Part II. *Journal of Nursing Administration*, 18(2), 11-19.
- Kramer, M., & Schmalenberg, C. (1991a). Job satisfaction and retention insight for the 90's: Part I. *Nursing*, 21(3), 50-55.
- Kramer, M., & Schmalenberg, C. (1991b). Job satisfaction and retention insight for the 90's: Part II. *Nursing*, 21(4), 51-55.
- Lake, E.T. (1999). *The organization of hospital nursing*. Unpublished doctoral dissertation, University of Pennsylvania.
- Malenka, D.J., McLerran, D., Roos, N., Fisher, E.S., & Wennberg, J.E. (1994). Using administrative data to describe casemix: A comparison with the medical record. *Journal of Clinical Epidemiology*, 47(9), 1027-1032.
- Manheim, L.M., Feinglass, J., Shortell, S.M., & Hughes, E.F. (1992). Regional variation in Medicare hospital mortality. *Nursing Inquiry*, 29(1), 55-66.
- Mayo, N.E., Danys, I., Carlton, J., & Scott, S.C. (1993). Accuracy of hospital discharge coding for stroke. *Canadian Journal of Cardiology*, 9(Suppl D), 121D-124D.
- McClure, M., Poulin, M., Sovie, M., & Wandelt, M. (1983). *Magnet hospitals: Attraction and retention of professional nurses*. Kansas City, MO: American Nurses Association.
- Mitchell, P.H., Armstrong, S., Simpson, T.F., & Lentz, M. (1989). American Association of Critical-Care Nurses demonstration project: Profile of excellence in critical care nursing. *Heart and Lung*, 18(3), 219-237.
- Mitchell, P.H., & Shortell, S.M. (1997). Adverse outcomes and variations in organization of care delivery. *Medical Care*, 35(11), NS19-32.

- O'Brien-Pallas, L.L., Giovannetti, P., Peereboom, E., & Marton, C. (1995). *Case costing and nursing workload: Past, present, and future*. Report #95-1. Hamilton, ON: Quality of Nursing Worklife Research Unit.
- Schultz, M.A. (1997). *The associations of hospital structure and financial characteristics to mortality and length of stay in patients with acute myocardial infarction*. Unpublished doctoral dissertation, University of California, Los Angeles.
- Shortell, S.M., & Hughes, E.F. (1988). The effects of regulation, competition, and ownership on mortality rates among hospital inpatients. *New England Journal of Medicine*, 318(17), 1100-1107.
- Shortell, S.M., Zimmerman, J.E., Rousseau, D.M., Gillies, R.R., Wagner, D.P., Draper, E.A., Knaus, W.A., & Duffy, J. (1994). The performance of intensive care units: Does good management make a difference? *Medical Care*, 32(5), 508-525.
- Shwartz, M., Ash, A.S., & Iezzoni, L.I. (1997). Comparing outcomes across providers. In L.I. Iezzoni (Ed.), *Risk adjustment for measuring healthcare outcomes* (2nd Ed.) (pp. 471-516). Chicago: Health Administration Press.
- Tibert, J. (1999). *Technical documentation phase II: Ontario registered nurse survey of hospital characteristics*. Toronto: Institute for Social Research.
- Tourangeau, A.E. (2001). *The effects of nursing-related hospital factors on 30-day medical mortality*. Unpublished doctoral dissertation, University of Alberta.

### Authors' Note

Dr. Ann E. Tourangeau was supported by a Canadian Institutes of Health Research Fellowship, an Alberta Heritage Foundation for Medical Research Studentship Award, and a Canadian Nurses Foundation/Canadian Health Services Research Foundation Training Award. Dr. Jack V. Tu is supported by a Canada Research Chair in Health Services Research.

This research was part of an international study of hospitals supported by the National Institute of Nursing Research, US National Institutes of Health (NR04513), directed by Dr. Linda H. Aiken, Center for Health Outcomes and Policy Research, University of Pennsylvania. The authors acknowledge the important contributions of the Center and members of the International Hospital Outcomes Research Consortium.

The authors would like to acknowledge the contributions and support of Keyi Wu, Biostatistician, Kathy Sykora, Biostatistician, Dr. Geoffrey Anderson, Senior Adjunct Scientist, and Dr. Peter Austin, all of the Institute for Clinical Evaluative Sciences, Toronto.

Comments may be directed to: Ann Tourangeau, Assistant Professor, Faculty of Nursing, University of Toronto, 50 St. George Street, Toronto ON M5S 3H4 Canada. Telephone: 416-978-6919. Fax: 416-978-8222. E-mail: <ann.tourangeau@utoronto.ca>.

# Why Nurses Are Calling in Sick: The Impact of Health-Care Restructuring

Leona R. Zboril-Benson

L'absentéisme chez les infirmières autorisées est une préoccupation importante pour les employeurs; c'est un problème qui coûte cher et résulte en un affaiblissement des normes en matière de soins. Malgré l'intérêt manifesté partout au monde et les recherches menées sur la question, on a accumulé relativement peu de connaissances sur ces déterminants. De nature non expérimentale et quantitative, la présente étude tente de cerner les raisons de l'absentéisme à partir d'un échantillon regroupant 2000 infirmières de première ligne dans la province canadienne de la Saskatchewan. On a défini l'absence comme la période correspondant au temps de travail manqué, à l'exclusion des périodes de vacances, de grève ou de mise à pied. On a cerné les causes principales de l'absentéisme, dont les affections bénignes et la fatigue attribuable à la surcharge de travail. Au total, 450 répondantes ont réfléchi sérieusement à la possibilité de quitter la profession infirmière; 50,4 % d'entre elles ont invoqué comme raisons principales la surcharge de travail et le stress. On a établi une corrélation entre un degré élevé d'absentéisme et un faible taux de satisfaction au travail, la longueur des quarts de travail, le travail aux soins actifs et le travail à temps plein. On a associé un degré modéré d'insatisfaction au travail à la longueur des quarts de travail et au travail aux soins actifs. La pénurie actuelle d'infirmières commande l'adoption de stratégies pour réduire l'absentéisme et augmenter la satisfaction au travail.

Absenteeism among registered nurses is a major concern for employers; it is costly and results in decreased standards of care. Despite the international interest in and research on absenteeism, there is relatively little cumulative knowledge regarding its determinants. This quantitative, non-experimental study profiled the reasons for absenteeism in a random sample of 2,000 front-line nurses in the Canadian province of Saskatchewan. Absence was defined as time away from work excluding holidays, strike, or layoff. Major causes of absenteeism were identified, including minor ailment and fatigue related to work overload. A total of 450 respondents had seriously considered leaving the nursing profession, with 50.4% citing overwork and stress as the primary causes. Higher rates of absenteeism were found to be associated with lower job satisfaction, longer shifts, working in acute care, and working full-time. Moderate job dissatisfaction was found to be associated with longer shifts and working in acute care. In light of the current nursing shortage, strategies for reducing absenteeism and increasing job satisfaction are warranted.

Canada and the United States are currently facing a shortage of nurses (Canadian Institute for Health Information, 2000; Canadian Nurses Association, 1997; Sochalski, 2001). Ryten (1997) estimates that by 2011

---

*Leona R. Zboril-Benson, RN, MN, CPN(C), is a PhD student in the Faculty of Nursing, University of Alberta, Edmonton, Canada.*

Canada will be short approximately 100,000 nurses. This shortage is exacerbated by a number of factors thought to be linked to recent health-care reforms, particularly in acute-care facilities. Many health-care professionals and consumer groups have not enthusiastically embraced restructuring and re-engineering initiatives (Aiken & Fagin, 1997), citing concerns over the implementation of restructuring strategies without empirical evidence of their effectiveness and the undermining of professional nursing practice.

Health-care restructuring has brought tremendous pressure to cut costs while maintaining or improving quality (Blegen, Goode, & Reed, 1998; Corey-Lisle, Tarzian, Cohen, & Trinkoff, 1999; Jones, 1993; Jones, Jennings, Moritz, & Moss, 1997). It has drastically changed the nursing environment, particularly in the acute-care sector. Cost-cutting measures have altered job designs and care delivery systems. Restructuring initiatives have included decreasing the number of nursing personnel, reducing the length of patient stays, developing multi-skilled workers by cross-training nurses, decentralizing services to patient-care units, and increasing the number of unlicensed personnel.

Restructuring approaches in the province of Saskatchewan are not unlike those used elsewhere and have had a similar effect on nurses. Health-care cuts have often been directed first at the nursing budget, which is the largest labour cost (Aiken, Clarke, & Sloane, 2000; Corey-Lisle et al., 1999; Gilliland, 1997; Kangas, Kee, & McKee-Waddle, 1999). Decisions to downsize the nursing workforce have been made on the assumption that shortened patient stays would reduce the need for acute-care nurses (Moore, Clarke, Regan, & Steele, 1999). Unfortunately, the workforce was reduced without first reducing the workload. Many registered nurses report that they are working harder than ever and that the quality of care has deteriorated over the past few years (Buerhaus & Staiger, 1999). Efforts to shorten patient stays have resulted in increased nursing needs among those patients who remain in hospital.

Studies have shown that an organization's climate and culture influence commitment, job satisfaction, turnover, and absenteeism among its employees (Adams & Bond, 2000; Aiken, Sloane, Lake, Sochalski, & Weber, 1999; Blegen, 1993; Blythe, Baumann, & Giovannetti, 2001; Cameron, Horsburgh, & Armstrong-Stassen, 1994; McDermott, Spence Laschinger, & Shamian, 1996; Meyer, Allen, & Topolnytsky, 1998; Vahtera, Kivimaki, & Pentti, 1997). Nurses who have remained in the workforce after restructuring face heavier workloads due to high nurse:patient ratios, resulting in increased levels of psychological dis-



tress and emotional exhaustion, and therefore higher absenteeism. Absenteeism, in turn, exacerbates the nursing shortage.

The nursing shortage can be viewed from two perspectives, as an internal shortage and as an external shortage (Kramer & Schmalenberg, 1988). The internal shortage, which refers to the professional work of nursing, can be caused by a variety of conditions in the work environment. According to Kramer and Schmalenberg, some of these conditions are: inadequately educated nurses; inexperienced nurses (such as new graduates or nurses who are new to the organization); nurses unaccustomed to working together or unfamiliar with the patients or the equipment (float and part-time nurses); inadequate support services, resulting in nurses having to fulfil non-nursing duties; and low job satisfaction among nurses. The external shortage is caused by such factors as insufficient numbers of nurses produced and increased demand for nursing staff due to changing technology and an increasingly aging population resulting in a larger number of high-acuity patients.

The nursing shortage is exacerbated by employee absenteeism (Rogers, Hutchins, & Johnson, 1990). Absenteeism leads to diminished quality of patient care (Gauci-Borda & Norman, 1997; Shamian & Villeneuve, 2000). It also puts increased pressure on those nurses who remain on the job, resulting in decreased morale and job satisfaction, and possibly turnover.

High rates of absenteeism among registered nurses are very costly to the health-care system and threaten the continuous delivery of quality care. In 1997, Statistics Canada estimated Canadian absenteeism at 7.4 days per year per employee ("Higher cost of health," 1998). Based on Statistics Canada estimates, in an organization of 1,000 employees with an average salary of \$190 per day, the cost of absenteeism would be \$1.4 million per year. In 1998, the estimated rate of absenteeism rose by almost half a day, to 7.8 days; nurses were the sickest employees in the country, losing 12.8 days (Akyeampong, 1999), significantly more than the national average.

A research investment spanning almost 50 years has yielded relatively little cumulative knowledge regarding the determinants of absenteeism (Brooke & Price, 1989). A comprehensive range of independent variables has been studied in an attempt to understand these determinants. Unfortunately, few reliable predictors have emerged and the total amount of variance accounted for in absence behaviour remains small (Kaiser, 1998). As suggested by Martocchio and Harrison (1993),

more effort is needed to uncover the mechanisms that generate absence-taking.

### **Purpose of the Study**

The purpose of this study was to profile the reasons for absenteeism given by front-line acute-care and long-term-care registered nurses in Saskatchewan. Given the staggering cost of absenteeism, a better understanding of its causes is of critical importance (Paget, Lang, & Schultz, 1998). In light of the current nursing shortage, it is clear that the health of nurses and of their work environment are important factors in sustaining the level of care that has been evident in the Canadian health-care system.

### **Conceptual Framework**

The primary assumption of Nicholson's (1977) A-B Continuum of Absence Types theory is that attendance is "normal" behaviour in most forms of employment. Most people, most of the time, attend work regularly, and the search for the causes of absence is a search for those factors that interrupt the regularity of attendance. Nicholson classifies absence-inducing events according to the degree of freedom they leave the individual to decide whether or not to stay away from work. Nicholson places events on an A-B continuum: A-type events are situations in which individual choice cannot influence the probability of absence (unavoidable absence); B-type events are situations in which the individual has complete control (avoidable absence). This theory focuses on causes (events) rather than effects (absences), and it places events on the continuum according to the characteristics and work and personal circumstances of the individual (Nicholson & Payne, 1987). Nicholson's theory offers researchers a way to more fully understand the role that individual attributions play in absenteeism.

### **Literature Review**

Since its publication, Nicholson's (1977) theory has been tested in two empirical studies, thus contributing to researchers' understanding of absenteeism.

Nicholson and Payne (1987) interviewed four groups of workers (white-collar male, white-collar female, blue-collar male, and blue-collar female) in Britain. They asked the workers to rate 12 events on their likelihood of causing them to be absent from work, and then to indicate

whether the same 12 events had actually been the causes of specific absences. These causes had been chosen to represent a continuum, varying in the degree to which they left the individual free to decide whether to stay away from work. The workers were found to be more likely to attribute absence to A-type events than to B-type events, even though a B-type event may have been the original cause of the absence.

The results of Nicholson and Payne's (1987) investigation yield support for Nicholson's (1977) theory. Only one event, serious illness, was clearly rated as an A-type event by the entire sample. Serious domestic problems and workplace accidents were rated equally close to the midpoint between A-type and B-type events. The remaining events (personal business matters, minor ailment, minor domestic problems, feeling depressed, local event of interest, major disagreement with boss, difficulty getting up on time, serious work overload, and disagreement with co-workers) were unreservedly rated as B-type events.

Paget et al. (1998) incorporated the items generated by Nicholson and Payne (1987) into a paper-and-pencil survey designed to assess frequency and type of absence among 118 working college students in California. Their investigation extended Nicholson and Payne's work significantly through the use of a questionnaire versus personal interview and American working students versus British workers. It assessed the reliability and validity of the Nicholson and Payne survey as suitable for the collection of employee absenteeism data.

Many studies have chosen not to utilize Nicholson's framework. Martocchio and Harrison (1993) argue that absenteeism research stems from a belief that absenteeism is a managerial problem rather than from scientific curiosity about individual behaviour. The framing of absence questions seems to compel researchers to seek a technique for reducing the incidence of absenteeism without any real understanding of the reasons for it (Cohen-Mansfield & Rosenthal, 1989; Covner, 1950). The availability and convenience of archival absence data have generated a lack of forethought about the questions, hypotheses, and methods used to address absenteeism (Martocchio & Harrison). Steers and Rhodes (1978) and Ferris and Rowland (1987) appear to place more value on predicting outcomes than on understanding the phenomenon of absenteeism. Farrell and Stamm (1988), after completing their meta-analysis, concluded that the best predictor of future absenteeism is past absenteeism.

Interestingly, absenteeism has been conceptualized as an individual or managerial problem. Little research has been conducted on the relationship between absenteeism and the work environment of an

institution. Investigating the work environment of an institution as an independent variable of absenteeism could serve to uncover the mechanisms that produce absence.

The present study was carried out in order to address the paucity of research focused on understanding absenteeism. It views absence not as a unitary construct but as comprising heterogeneous elements. The challenge lies in discovering what these elements are.

## **Methods**

Ethical approval was obtained from the Thesis Committee, College of Nursing, University of Saskatchewan; the University of Saskatchewan Advisory Committee on Ethics in Behavior Sciences Research; and the Saskatchewan Registered Nurses' Association.

The investigation was conducted through a survey of registered nurses employed in both acute-care and long-term-care settings using a revised questionnaire from the non-experimental research design of Paget et al. (1998).

The questionnaire was mailed to a sample of 2,000 nurses drawn from the total population of 4,936 practising acute-care and long-term-care registered nurses in Saskatchewan, or approximately 41% of the population. The sample was randomly selected from the Saskatchewan Registered Nurses' Association database. A reminder letter with an additional copy of the survey was mailed to the entire sample approximately 1 month after the initial mailing. Data were collected over a 4-month period (August–November 1999).

The questionnaire consisted of six parts. The first was a question concerning the respondent's number of absences. The next two parts were Likert-scale items on frequency of and susceptibility to absenteeism. One item asked respondents to rate the frequency of 18 different types of absence. The other item asked respondents to rate the causes of absence on a continuum from A (unavoidable) to B (avoidable). Parts 4 and 5 were open-ended questions on intentions to leave the nursing profession and recommendations for reducing nurse absenteeism. The final part comprised questions on demographics: age, gender, level of nursing education, years of nursing experience, primary area of work, and employment status. The concluding item in this part was a rating of overall job satisfaction on a five-point scale (highly dissatisfied, moderately dissatisfied, satisfied, moderately satisfied, highly satisfied).

For the present study, a number of changes were made to better reflect the nursing profession. One cause of absence was reworded and four causes were added (fatigue related to work overload, fatigue related to length of shift/potential for overtime at end of shift, double-booked with another agency/facility, inclement weather, and other).

Return of the completed survey was taken to signify consent to participate.

### *Pilot Study*

A pilot study was conducted with respondents similar to the study population to assess internal consistency, reliability, and content validity of the revised instrument. Eleven practising, front-line registered nurses were asked to review and provide feedback on the preliminary version of the questionnaire. They were asked whether they understood the questions and the instructions and whether they found the questions objectionable in any way. All respondents expressed a belief that the instrument captured important causes of absenteeism. One question was added as a result of the pilot study (primary area of work: acute care or long-term care).

### *Data Analysis*

Data analysis was completed using SPSS version 9.0 (SPSS, 1999). Initially the data were examined to determine the distribution of the scores. Descriptive statistics were used to determine the frequency of responses to each item. Cross-tabulations were performed to determine frequency of item responses within categories. Chi-square, the most commonly used non-parametric test (Norman & Streiner, 1999), was used to examine associations between variables. When the chi-square is statistically significant, a residual can be computed to determine which cells, or groups, are the major contributors to the significant chi-square (SPSS).

### **Findings**

A total of 1,079 useable questionnaires were returned, for a response rate of 54%. The typical respondent was female, prepared at the diploma level, aged 41 to 45 years, married, and with fewer than two dependants living at home. The largest percentage of respondents worked full-time rotating 12-hour shifts and were employed in acute-



care facilities. They worked an average of 34 hours and approximately 2 hours of overtime per week. The typical respondent lived approximately 15 kilometres from work, was not responsible for elder care, and did not have a chronic illness. As part of the survey, the respondents were provided with examples of chronic illnesses. Migraine headache was the illness most commonly circled. The majority of respondents had a partner who, as the primary wage earner, was employed outside of the home and whose work did not involve travel.

<b>Table 1</b> <i>Frequency of Absence-Causing Events in Previous 3 Months (n %)</i>		
	<b>1 or 2</b>	<b>&gt; 3</b>
Minor ailment yourself (e.g., cold, headache, upset stomach, hangover)	428 (39.7)	26 (2.4)
Fatigue related to serious overload of work duties	191 (17.7)	50 (4.6)
Serious illness yourself	191 (17.7)	22 (2.0)
Serious domestic problem (e.g., death in the family, relationship problems, family illness)	188 (17.4)	2 (0.2)
Local/social event of interest to you during work hours (e.g., concert, wedding)	132 (12.2)	22 (2.0)
Personal business to attend to during work hours (e.g., doctor's appointment, buying a house)	113 (10.5)	10 (0.9)
Fatigue related to length of shift/potential of overtime at end of shift	104 (9.6)	35 (3.2)
Minor domestic problem (e.g., family member with minor illness, child-care problems)	97 (9.0)	8 (0.7)
Accident to yourself at work	92 (8.5)	5 (0.5)
Other	76 (7.0)	22 (2.0)
Feeling depressed	66 (6.1)	7 (0.7)
Dislike work	57 (5.3)	7 (0.6)
Inclement weather	51 (4.7)	0 (0.0)
Finding it difficult to get up on time	38 (3.5)	20 (1.9)
Double-booked with another agency/facility	20 (1.9)	0 (0.0)
Car/transportation problems	19 (1.8)	2 (0.2)
Disagreement with boss	12 (1.1)	3 (0.3)
Disagreement with co-workers	11 (1.0)	2 (0.2)

**Table 2** *Respondent-Rated Absence Susceptibility*

Cause of Absence	Susceptibility*	
	Mean	SD
Serious illness yourself	1.82	1.03
Serious domestic problem	2.53	1.41
Accident to yourself at work	3.17	1.05
Minor ailment yourself	3.90	.97
Minor domestic problems	4.20	1.00
Local/social event of interest to you during work hours	4.25	1.04
Fatigue related to serious overload of work duties	4.32	.93
Inclement weather	4.42	.89
Fatigue related to length of shift/potential of OT	4.48	.85
Personal business to attend to during work hours	4.48	.89
Car/transportation problems	4.54	.84
Feeling depressed	4.61	.77
Double-booked with another agency/facility	4.71	.81
Dislike work	4.72	.66
Disagreement with boss	4.79	.61
Disagreement with co-workers	4.81	.52
Finding it difficult to get up on time	4.85	.53
Other	4.90	.54
* Scale 1–5 (1 = certain to be absent from work; 5 = certain to go to work)		

### *Numbers and Causes of Absences*

Respondents were asked to indicate their number of absences in the previous 3 months. An absence was defined as any time away from scheduled work excluding holidays, strike, or layoff. The mean number of absences for the sample was 2.08 days (median = 1.00 day; *SD* = 5.43 days). A total of 475 respondents (44%) had not been absent. Of the remainder, the mean number of absences was 2.89 days (median = 2.00 days; *SD* = 4.13 days).

Respondents were asked to rate 18 classes of causes in order to determine the prevalence of absence. Table 1 shows the percentage dis-

tribution for the 18 absence-producing events, rank ordered by the number of respondents claiming events had occurred one or more times. Minor ailment ( $N = 428$ ; 39.7%) was the most frequent cause of absences that occurred once or twice. Fatigue related to work overload ( $N = 50$ ; 4.6%) and fatigue related to length of shift/potential for overtime at end of shift ( $N = 35$ ; 3.2%) were the most frequent causes of absences that occurred three or more times.

Respondents were asked to rate 18 potential causes of absence on a five-point Likert scale (1 = certain to be absent; 5 = certain to go to work). This item measured those absences deemed by respondents as unavoidable, or towards the A end of the continuum. Table 2 shows the mean scores for the 18 events.

The results indicate that one event, serious illness, is almost guaranteed to lead to absence. The respondents ranked only serious illness at the A end (unavoidable) of the continuum. Serious domestic problems and accidents at work were ranked approximately midway on the continuum. All of the other causes were ranked at the B end.

### *Considering Leaving the Profession*

Respondents were asked whether they had seriously considered leaving the nursing profession. Of those who had considered leaving ( $N = 450$ ), the most frequent reasons given were overwork and stress ( $N = 227$ ; 50.4%) and disillusionment with nursing ( $N = 70$ ; 15.6%).

### *Recommendations for Reducing Absenteeism*

Respondents were asked to provide recommendations for reducing nurse absenteeism. Some offered more than one recommendation. There were 335 (26.1%) blank responses. Of the recommendations offered, provision of adequate staffing levels in the workplace was the most common ( $N = 468$ ; 36.5%).

### *Job Satisfaction*

Seventy percent of respondents rated their overall job satisfaction as "satisfied" to "highly satisfied." Chi-square analyses revealed that nurses with lower job satisfaction were significantly more likely to cite the following causes for their absence: minor ailment ( $\chi^2 = 14.842$ ,  $p < .01$ ), feeling depressed ( $\chi^2 = 22.490$ ,  $p < .01$ ), fatigue related to work overload ( $\chi^2 = 47.670$ ,  $p < .01$ ), fatigue related to length of shift/potential for overtime at end of shift ( $\chi^2 = 21.576$ ,  $p < .01$ ), accident at work

**Table 3** *Reasons for Considering Leaving Nursing (N = 450)*

	Absolute Frequency (N)	Relative Frequency (%)
Overworked and stressed	227	50.4
Disillusioned with nursing	70	15.6
Serious injury /chronic illness	37	8.2
Poor management	30	6.7
Heavy work/home responsibility	25	5.6
Undervalued by management/public	22	4.9
*Transferred jobs (within nursing)	17	3.8
Politics/government	13	2.8
Miscellaneous	9	2.0
Total	450	100.0
* Respondent reported having transferred to another nursing job rather than leave the profession.		

( $\chi^2 = 9.963, p < .05$ ), double-booked with another agency / facility ( $\chi^2 = 15.049, p < .01$ ), and dislike work ( $\chi^2 = 33.377, p < .01$ ). None of the other causes of absence were significantly associated with the job satisfaction variable.

### *Job Satisfaction and Absenteeism*

Chi-square analyses were used for absence and job satisfaction and to examine absence and job satisfaction for each of the following factors: employment status, primary area of work, and length of shift. Nurses who expressed high job dissatisfaction were significantly more likely to have several absences (8 or more) ( $\chi^2 = 28.748, p < .01$ ).

Absence was also significant for employment status, primary area of work, and length of shift. Nurses who worked 12-hour shifts had higher absence than nurses who worked 8-hour shifts ( $\chi^2 = 7.606, p < .05$ ). Full-time nurses had higher rates of absenteeism than part-time nurses ( $\chi^2 = 16.054, p < .01$ ). Acute-care nurses had higher absenteeism than long-term-care nurses ( $\chi^2 = 11.243, p < .05$ ).

Job satisfaction was significant for primary area of work and length of shift but not for employment status. Nurses who worked 12-hour

shifts experienced moderate job dissatisfaction while those who worked 8-hour shifts experienced high job satisfaction ( $\chi^2 = 19.679, p < .01$ ). Nurses working in long-term-care settings expressed higher job satisfaction than nurses working in acute-care settings ( $\chi^2 = 10.438, p < .05$ ).

## Discussion

Absenteeism is a complex phenomenon. Although a multitude of factors have previously been studied with a view to establishing relationships among them, these investigations have resulted in few reliable predictors. The present study found predictors of absence among nurses to be moderate to high job dissatisfaction, full-time work, 12-hour shifts, and working in an acute-care setting.

These self-reported data show that minor ailment, fatigue related to work overload, serious illness, and serious domestic problems are the most frequently occurring absence-inducing events. These findings are similar to those of Nicholson and Payne (1987), who found minor ailment, serious illness, and serious domestic problems to be the most frequent causes of absence. It is noteworthy that fatigue related to work overload, one of the most frequent causes of absence in the present study, was not offered as a possible choice in Nicholson and Payne's investigation. This type of fatigue may be related to the current work environment of nurses. Nurses who worked 12-hour shifts experienced moderate job dissatisfaction and higher rates of absenteeism. A large percentage of the nurses in the sample had seriously considered leaving the profession as a result of overwork and stress. It is possible that the most common recommendation for reducing nurse absenteeism, the provision of adequate staffing levels, would be effective in reducing fatigue among nurses.

There is an interesting disparity in the findings. The respondents rated minor ailment (3.90) and fatigue related to work overload (4.32) as unlikely to keep them from going to work (see Table 2). However, they also gave minor ailment and fatigue as a frequent cause of absence (see Table 1). They appear to have underestimated the degree to which they used minor ailment and fatigue as causes of absence.

Minor ailment was the most frequently reported event and most frequently reported cause of absence — that is, it was rated towards the A end of the continuum. Yet minor ailment was rated towards the B end of the susceptibility scale. One must ask whether nurses are absent from work for this reason more often than anticipated, or whether their



attributions of their absence differ from their estimates of susceptibility. Extending Nicholson and Payne's (1987) explanation to the nursing profession, perhaps nurses are more likely to use medical justifications for their absence when reporting actual events than when rating their own susceptibility. The implication is that a number of absences might have been incorrectly attributed to minor ailment.

Employees might be expected to attribute their absence to factors outside their control (minor illness) instead of to factors within their control (e.g., attending a concert, waking up late). By attributing absences to minor illness (A-type cause), nurses may be masking the fact that the cause is actually B-type. Since illness is, among both employers and employees, a socially acceptable reason for absence (Edwards & Scullion, 1982; Martocchio & Judge, 1994; Nicholson & Johns, 1985; Nicholson & Payne, 1987), minor illness may be remembered as the cause even if it was not the cause. Unfortunately, Nicholson's A-B theory does not hypothesize that A-type events differ across individuals for susceptibility. Furthermore, the A-B theory may not be fully supported with this nursing population. While serious illness was the only cause whose mean score was ranked near the A end of the continuum, there appears to be some disagreement about this among respondents, as evidenced by the high standard deviation (see Table 2).

### *Fatigue and Absenteeism*

Of the 450 respondents (41.7%) reporting that they had seriously considered leaving the nursing profession, 227 (50.4%) gave overwork and stress as the reason. This finding is particularly disturbing in an era of acute nursing shortages. It also supports the results of previous studies linking nurses' job satisfaction and working conditions. Irvine and Evans (1995) established a relationship among job satisfaction, behavioural intentions, and turnover in their meta-analysis of 70 studies of nursing retention and job satisfaction published before 1992. Variables negatively correlated to job satisfaction were work overload, stress, and role conflict. Blegen (1993) reached similar conclusions in a meta-analysis of 48 job-satisfaction studies with over 15,000 nurses. High job dissatisfaction emerges as a determinant of absenteeism, turnover, and propensity to leave (Cavanagh, 1990; Kaiser, 1998) and magnifies the problems of nurse recruitment and retention (Tovey & Adams, 1999).

As previously noted, registered nurses working 12-hour shifts experienced moderate job dissatisfaction and higher absenteeism than those working 8-hour shifts. Fatigue related to length of shift was one

of the most frequent causes of three or more absences over the 3-month period. Perhaps 12-hour shifts are too long for nurses in the current health-care situation. While they offer longer and more frequent blocks of time off than 8-hour shifts, concerns about fatigue and safety must be addressed (Smith, Folkard, Tucker, & Macdonald, 1998). It is possible that instituting 10-hour shifts or flexible scheduling would serve to reduce fatigue-related absenteeism among nurses. Investigation of these possibilities is warranted in the context of the current nursing shortage, in order to help decrease absenteeism, boost job satisfaction, and possibly increase nurse retention and recruitment.

### *Nursing Shortage*

Kramer and Schmalenberg (1988) suggest that external nursing shortages are caused by internal nursing shortages. Hospitals must foster organizational conditions that attract nurses and that earn them a reputation of excellence in nursing practice. A corporate culture of excellence is a major determinant of job satisfaction, retention, and recruitment among nurses (Goodridge & Hack, 1996; Kangas et al., 1999). Studies with magnet hospitals have identified several organizational attributes that enable nurses to fully use their knowledge and expertise in providing high-quality care. These attributes include autonomy and control over the practice environment, good relationships with physicians, communication, visible management, support for education, employee recognition, self-governance, and opportunities for specialized practice (Aiken et al., 1999; Aiken, Havens, & Sloane, 2000; Aiken & Sloane, 1997; Aiken, Sloane, & Lake, 1997; Aiken, Sloane, & Sochalski, 1998; Aiken, Smith, & Lake, 1994; Aiken, Sochalski, & Lake, 1997; Buchan, 1999; Havens & Aiken, 1999; McClure, Poulin, Sovie, & Wandelt, 1983; Scott, Sochalski, & Aiken, 1999). In work environments that feature a culture of excellence, internal nursing shortages are avoided through the recruitment and retention of satisfied, qualified nurses. As a result, external nursing shortages may have a lesser effect on these organizations.

In the particular setting of the present study, quality nursing care appears to have been overshadowed by budgetary concerns that left nurses feeling overworked, stressed, and contemplating the notion of leaving the nursing profession. In the face of the current external nursing shortage, the adoption of effective retention strategies, such as those described in the magnet hospital literature, may help to alleviate the internal nursing shortage.

## **Conclusions**

Health-care restructuring has drastically altered the work environment of nurses, particularly in the acute-care sector. Increasing patient acuity and changes in the staff mix and staffing levels in health-care organizations have created more responsibility and heavier workloads for nursing staff. Patient care may suffer because nurses no longer have sufficient time to achieve quality outcomes, which may result in lower job satisfaction and morale and in increased absenteeism. Nurses are experiencing fatigue under the current conditions. The staff nurse is the one essential link in the delivery of quality patient care. Every effort must be made to foster the conditions necessary to ensure quality patient care. Furthermore, long-term strategies are needed to increase the supply of registered nurses and to avoid Ryten's (1997) projected shortage.

Monitoring the rates and causes of absenteeism is important to health resource management and planning. Therefore further research is required into the frequency and susceptibility of minor ailment as a cause of absence. Are nurses using this as a blanket reason for absence because it is acceptable to their employers and co-workers? In the present study, nurses rated minor ailment towards the A end of the continuum (unavoidable) for absence frequency but towards the B end (avoidable) for absence susceptibility.

Future studies of absenteeism might identify the areas of nursing in which respondents are employed (e.g., medicine, surgery, critical care, pediatrics, emergency, operating room). Absenteeism may be influenced by the degree of nursing specialization required. Do nurses working in highly technological areas such as critical care or the operating room exhibit higher levels of absenteeism? Furthermore, it might be useful to split fatigue related to length of shift/potential for overtime into two separate causes of absence, as one could have a greater impact than the other.

The results of this study add to the body of knowledge on the issues surrounding nurse absenteeism and may be useful in various health-care settings. The job satisfaction and absenteeism levels reported may be indicative of the turbulent times in which nurses are working as health care continues to change. In the context of the nursing shortage, policy-makers and decision-makers must keep informed about the changes and about the impact of the evolving health-care environment on nurses' job satisfaction, particularly if retention rates of qualified nursing staff are to be improved.

## References

- Adams, A., & Bond, S. (2000). Hospital nurses' job satisfaction, individual and organizational characteristics. *Journal of Advanced Nursing*, 32(3), 536-543.
- Aiken, L.H., Clarke, S.P., & Sloane, D.M. (2000). Hospital restructuring: Does it adversely affect care and outcomes? *Journal of Nursing Administration*, 30(10), 457-465.
- Aiken L., & Fagin, C.M. (1997). Evaluating the consequences of hospital restructuring. *Medical Care*, 35(Suppl 10), OS1-4.
- Aiken, L.H., Havens, D.S., & Sloane, D.M. (2000). The Magnet Nursing Services Recognition Program: A comparison of two groups of magnet hospitals. *American Journal of Nursing*, 100(3), 26-35.
- Aiken, L.H., & Sloane, D.M. (1997). Effects of specialization and client differentiation on the status of nurses: The case of AIDS. *Journal of Health and Social Behavior*, 38(3), 203-222.
- Aiken, L.H., Sloane, D.M., & Lake, E.T. (1997). Satisfaction with inpatient acquired immunodeficiency syndrome care: A national comparison of dedicated and scattered-bed units. *Medical Care*, 35(9), 948-862.
- Aiken, L.H., Sloane, D.M., Lake, E.T., Sochalski, J., & Weber, A.L. (1999). Organization and outcomes of inpatient AIDS care. *Medical Care*, 37(8), 760-772.
- Aiken, L.H., Sloane, D.M., & Sochalski, J. (1998). Hospital organization and outcomes. *Quality in Health Care*, 7(4), 222-226.
- Aiken, L.H., Smith, H.L., & Lake, E.T. (1994). Lower Medicare mortality among a set of hospitals known for good nursing care. *Medical Care*, 32(8), 771-787.
- Aiken, L.H., Sochalski, J., & Lake, E.T. (1997). Studying outcomes of organizational change in health services. *Medical Care*, 35(Suppl 11), NS6-18.
- Akyeampong, E.B. (1999). Missing work in 1998: Industry differences. *Perspectives on Labour and Income*, 11(3), 30-36. (Statistics Canada Catalogue #75-001-XPE.)
- Blegen, M.A. (1993). Nurses' job satisfaction: A meta-analysis of related variables. *Nursing Research*, 42(1), 36-41.
- Blegen, M.A., Goode, C.J., & Reed, L. (1998). Nurse staffing and patient outcomes. *Nursing Research*, 47(1), 43-50.
- Blythe, J., Baumann, A., & Giovannetti, P. (2001). Nurses' experiences of restructuring in three Ontario hospitals. *Image: Journal of Nursing Scholarship*, 33(1), 61-68.
- Brooke, P.P. Jr., & Price, J.L. (1989). The determinants of employee absenteeism: An empirical test of a causal model. *Journal of Occupational Psychology*, 62, 1-19.
- Buchan, J. (1999). Still attractive after all these years? Magnet hospitals in a changing health care environment. *Journal of Advanced Nursing*, 30(1), 100-108.

- Buerhaus, P.I., & Staiger, D.O. (1999). Trouble in the nurse labour market: Recent trends and future outlook. *Health Affairs*, 18(1), 214–222.
- Cameron, S.J., Horsburgh, M.E., & Armstrong-Stassen, M. (1994). Job satisfaction, propensity to leave, and burnout in RNs and RNAs: A multivariate perspective. *Canadian Journal of Nursing Administration*, 7(3), 43–64.
- Canadian Institute for Health Information. (2000). *Health care in Canada: A first annual report*. Ottawa: Author.
- Canadian Nurses Association. (1997, October). *The future supply of registered nurses in Canada: A discussion paper*. Ottawa: Author.
- Cavanagh, S.J. (1990). Predictors of nursing staff turnover. *Journal of Advanced Nursing*, 15, 373–380.
- Cohen-Mansfield, J., & Rosenthal, A.S. (1989). Absenteeism of nursing staff in a nursing home. *International Journal of Nursing Studies*, 26(2), 187–194.
- Corey-Lisle, P., Tarzian, A.J., Cohen, M.Z., & Trinkoff, A.M. (1999). Healthcare reform: Its effects on nurses. *Journal of Nursing Administration*, 29(3), 30–37.
- Covner, B.J. (1950). Management factors affecting absenteeism. *Harvard Business Review*, 28(5), 42–48.
- Edwards, P.K., & Scullion, H. (1982). *The social organization of industrial conflict: Control and resistance in the workplace*. Oxford: Blackwell.
- Farrell, D., & Stamm, C.L. (1988). Meta-analysis of the correlates of employee absence. *Human Relations*, 41(3), 211–227.
- Ferris, G.R., & Rowland, K.M. (1987). Tenure as a moderator of the absence-intent to leave relationship. *Human Relations*, 40(5), 255–266.
- Gauci-Borda, R., & Norman, I.J. (1997). Factors influencing turnover and absence of nurses: A research review. *International Journal of Nursing Studies*, 34(6), 385–394.
- Gilliland, M. (1997). Workforce reductions: Low morale, reduced quality care. *Nursing Economics*, 15(6), 320–322.
- Goodridge, D., & Hack, B. (1996). Assessing the congruence of nursing models with organizational culture: A quality improvement perspective. *Journal of Nursing Care Quality*, 10(2), 41–48.
- Havens, D.S., & Aiken, L.H. (1999). Shaping systems to promote desired outcomes. *Journal of Nursing Administration*, 29(2), 14–20.
- "Higher cost of health." (1998, October 12). *Globe and Mail* (Toronto), p. B13.
- Irvine, D.M., & Evans, M.G. (1995). Job satisfaction and turnover among nurses: Integrating research findings across studies. *Nursing Research*, 44(4), 246–253.
- Jones, K.R. (1993). Outcomes analysis: Methods and issues. *Nursing Economics*, 11(3), 145–152.
- Jones, K.R., Jennings, B.M., Moritz, P., & Moss, M.T. (1997). Policy issues associated with analyzing outcomes of care. *Image: Journal of Nursing Scholarship*, 29(3), 261–267.



- Kaiser, C.P. (1998). What do we know about employee absence behavior? An interdisciplinary interpretation. *Journal of Socio-economics*, 27(1), 80–98.
- Kangas, S., Kee, C.C., & McKee-Waddle, R. (1999). Organizational factors, nurses' job satisfaction, and patient satisfaction with nursing care. *Journal of Nursing Administration*, 29(1), 32–42.
- Kramer, M., & Schmalenberg, C. (1988). Magnet hospitals: Institutions of excellence. Part II. *Journal of Nursing Administration*, 18(2), 11–19.
- Martocchio, J.J., & Harrison, D.A. (1993). To be there or not to be there? Questions, theories, and methods in absenteeism research. *Personnel and Human Resource Management*, 11, 259–328.
- Martocchio, J.J., & Judge, T.A. (1994). A policy-capturing approach to individuals' decisions to be absent. *Organizational Behavior and Human Decision Processes*, 57, 358–386.
- McClure, M.L., Poulin, M.A., Sovie, M.D., & Wandelt, M.A. (1983). *Magnet hospitals: Attraction and retention of professional nurses*. Kansas City, MO: American Academy of Nursing.
- McDermott, K., Spence Laschinger, H.K., & Shamian, J. (1996). Work empowerment and organizational commitment. *Nursing Management*, 27(5), 44–48.
- Meyer, J.P., Allen, N.J., & Topolnytsky, L. (1998). Commitment in a changing world of work. *Canadian Psychology*, 39(1/2), 83–93.
- Moore, G., Clarke, H.F., Regan, S., & Steele, M. (1999). Nursing and healthcare system reform: A balancing act. *Hospital Quarterly*, 25–33.
- Nicholson, N. (1977). Absence behavior and attendance motivation: A conceptual synthesis. *Journal of Management Studies*, 14, 231–252.
- Nicholson, N., & Johns, G. (1985). The absence culture and the psychological contract – Who's in control of absence? *Academy of Management Review*, 10, 397–407.
- Nicholson, N., & Payne, R. (1987). Absence from work: Explanations and attributions. *Applied Psychology: An International Review*, 36(2), 121–132.
- Norman, G.R., & Streiner, D.L. (1999). *PDQ statistics (2nd Ed.)*. Hamilton, ON: B.C. Decker.
- Paget, K.J., Lang, D.L., & Shultz, K.S. (1998). Development and validation of an employee absenteeism scale. *Psychological Reports*, 82, 1144–1146.
- Rogers, J.E., Hutchins, S.G., & Johnson, B.J. (1990). Nonpunitive discipline: A method of reducing absenteeism. *Journal of Nursing Administration*, 20(7/8), 41–43.
- Ryten, E. (1997, September). *A statistical picture of the past, present, and future of registered nurses in Canada*. Ottawa: Canadian Nurses Association.
- Scott, J.G., Sochalski, J., & Aiken, L. (1999). Review of magnet hospital research: Findings and implications for professional nursing practice. *Journal of Nursing Administration*, 29(1), 9–19.
- Shamian, J., & Villeneuve, M. (2000). Building a national nursing agenda: A timely response for the sickest workers in the country. *Hospital Quarterly* (Fall), 16–18.

- Smith, L., Folkard, S., Tucker, P., & Macdonald, I. (1998). Work shift duration: A review comparing eight hour and 12 hour shift systems. *Occupational and Environmental Medicine*, 55(4), 217-229.
- Sochalski, J. (2001). Quality of care, nurse staffing, and patient outcomes. *Policy, Politics and Nursing Practice*, 2(1), 9-18.
- SPSS. (1999). *SPSS base 9.0: Applications guide*. Chicago: Author.
- Steers, R.M., & Rhodes, S.R. (1978). Major influences on employee attendance: A process model. *Journal of Applied Psychology*, 63(4), 391-407.
- Tovey, E.J., & Adams, A.E. (1999). The changing nature of nurses' job satisfaction: An exploration of sources of satisfaction in the 1990s. *Journal of Advanced Nursing*, 30(1), 150-158.
- Vahtera, J., Kivimäki, M., & Pentti, J. (1997). Effects of organizational downsizing on health of employees. *Lancet*, 350, 1124-1128.

### **Author's Note**

This article is based on the author's master's thesis. The author wishes to thank Dr. Gail Laing, Professor, University of Saskatchewan, and Dr. Phyllis Giovannetti, Professor, University of Alberta, for their assistance in preparing this paper.

Financial support for Ms. Zboril-Benson has been provided by the College of Graduate Studies and Research, by the College of Nursing, University of Saskatchewan, Saskatoon, and by the Saskatchewan Operating Room Nurses Group.

Correspondence may be directed to: L. Zboril-Benson, 3rd Floor, Clinical Sciences Building, Faculty of Nursing, University of Alberta, Edmonton AB T6G 2G3 Canada. Email: <leonaz@ualberta.ca>.



## *Designer's Corner*

# **Health Human Resource Planning for the New Millennium: Inputs in the Production of Health, Illness, and Recovery in Populations**

**Stephen Birch**

### **Introduction**

Health human resource planning (HHRP) is concerned with having the right people with the right skills in the right place at the right time to provide the right services to the right people. It therefore involves careful analysis of both the needs for health-care services and the approaches to be used to meet these needs. The emphasis of much HHRP policy to date has been on the effects of demographic change — the effect of an aging population on total health-care needs and the effect of an aging workforce on total service provision (Denton, Gafni, & Spencer, 1993, 1994, 1995).

Traditionally, HHRP has focused on individual health-care professions with estimated shortfalls or surpluses dealt with predominantly through proposed changes in the size of training programs. Several research reports have highlighted the limitations of these approaches and recommendations have been made for improving these processes (Barer & Stoddart, 1991; Birch, Lavis, Markham, Woodward, & O'Brien-Pallas, 1994; Lomas, Stoddart, & Barer, 1986; O'Brien Pallas, 1993). For example, needs might differ according to the socio-economic mix in the population while the quantity of care will depend on the levels of activity of providers. However, these studies have generally been concerned with refining the existing approaches. In particular, they have generally remained focused on individual professions and based predominantly on applying what individual professions do and the way they currently

---

*Stephen Birch, PhD, is Professor, Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ontario, Canada.*

do it to the projected future population. As a result, HHRP has been largely an exercise in demography based on implicit assumptions that population age structure determines the service needs of the population and that the number of providers determines the quantity of care provided.

Such approaches fail to reflect the complex nature of the processes underlying the needs for services (population health) and the delivery of services (health-care provision). Both represent production processes in which outputs are produced from a combination of different inputs. The HHRP processes used to date largely assume that the way age affects needs (epidemiology) and the way the numbers of providers affect the quantity of services (productivity) are exogenous, independent of other factors and hence constant over time. However, if epidemiology and productivity are not "fixed" in these ways, then HHRP based on these assumptions will estimate human health resource requirements inaccurately.

In the rest of this paper a production function approach is presented as a means of relaxing some of the assumptions of current approaches in ways that reflect the underlying nature of the HHRP problem.

### Needs and the Aging Population

The total health-care needs of the population depend on its size and age distribution. Health risks differ by age and, after childhood, generally increase with age. Hence an older population will generally have greater needs for care than a younger population, all other things being equal (Eyles, Birch, Chambers, Hurley, & Hutchison, 1991). This does not mean, however, that the aging of the population will "bankrupt" the health-care system. Denton and Spencer (2000) show that on the assumption that age-specific needs of the population remain the same over time, the impact of aging on health-care expenditures will be modest and more than offset by savings arising from the impact of demographic change in other areas of government expenditure.

The aging population, however, has other implications for HHRP, since it is itself an indication of *changes* in age-specific needs for care. Observed cross-sectional or "point in time" differences in age-specific needs cannot be used as a basis for modelling the needs of a future population. Health risks, and hence the needs for care, change over time. For example, life expectancy at birth as well as at different ages in the life cycle has increased over time (Evans, 1984). Similarly, it has been



argued that, over time, morbidity in populations has been increasingly "compressed" into the later years of life (Fries, 1980). Not only have we added years to life, but we have added life to years.

Changes in the average levels of health have not been equally spread among all social groups. The assumption of constant age-specific needs is unlikely to be valid for any group. For example, there is some evidence that all social groups have experienced improvements in life expectancy over time but that improvements among the poorest groups have failed to keep pace with the improvements among more prosperous groups. As a result, inequalities in health have risen (Birch, 1999). In terms of the production of health, the effect of age on health has changed over time. Changes in other factors over time mean that 65-year-olds on average today can expect to be healthier, and hence have fewer health-care needs, than 65-year-olds on average 20 years ago. Hence the changes in health levels represent outcomes of a production function for health resulting from changes in the levels and mix of health inputs over time.

More attention might be given in HHRP to the dynamic nature of the health-care needs of populations. At the simplest level this would involve measuring changes in the levels and distribution of health between planning periods and using sensitivity analyses that consider changes in the levels and distribution of health-care needs in the future population. A more sophisticated approach would involve estimating health-production functions by analyzing observed changes in the levels and distribution of health in relation to the levels and mix of factor inputs. Estimated levels of factor inputs could then be used to predict the levels and distribution of health in future populations.

### **Providers and the Quantity of Health Care**

The relationship between the quantity of an input used and the output produced is a measure of the input's productivity. The output of services from a given "population" of providers will depend on many things, not just the size and other characteristics of the providers themselves. For example, nurses do not provide care alone. They use their skills in combination with other human and non-human inputs to provide services to meet the needs of the population. The number of inpatient episodes "produced" by a given number of nurses is likely to be dependent on the number of beds available.

Innovation involves the identification of new ways of production that increase the productivity of resources. Improvements in produc-

tivity provide the basis for increasing wealth in an economy. As more is produced from the same resources, there is more output to share among the population. For example, changes to aspects of production in the car industry might lead to each car produced requiring fewer person hours of labour on average. Although the production of effective health-care services is far more complex than the production of a car, the principles underlying the production function are the same. Improvements in the productivity of health human resources provide a source of increased output in the health-care sector. In the absence of such improvements, the opportunity cost of health care, measured by the number of other commodities forgone to produce a given level of health care, would rise continuously.

HHRP has traditionally, and implicitly, assumed that the service output of human resources remains fixed over time. However, failure to identify changes in productivity undermines HHRP processes by overestimating human health resource requirements and the costs of health-care services. Moreover, it fails to appropriately recognize the contribution of these human resources to the provision of health-care services to the population.

The health-care system is a collection of different sectors of activity (inpatient, outpatient, primary care, community care), each providing a range of different service types (acute, chronic, long-term care, etc.). In addition, many care episodes involve interfaces between services and between sectors that give rise to a continuum of care. At the simplest level, productivity is measured by the output per unit input of interest (e.g., cases per nurse). However, this can be used as a measure of productivity only where all other inputs in the production function remain constant over time.

The last decade has seen major changes involving a shift of care towards outpatient and community settings accompanied by large reductions in the numbers of hospital beds. As a result, the acuity level of those patients who are admitted to hospital is on average higher today than it was 10 years ago. In other words, nurses are working with fewer beds and sicker patients. By weighting inpatient cases by acuity level, we can compare the intertemporal pattern of acuity-adjusted inpatient load with the corresponding pattern of inpatient beds to provide an assessment of the trend in productivity of nurses after allowing for changes in other inputs.

Attempts to analyze trends in productivity will require both careful specification of production functions and valid measures of both inputs and outputs. The measurement of productivity change is complex and

can involve many pitfalls if done incorrectly. Increases in output resulting from increases in unpaid labour might appear as increases in productivity but actually reflect underestimates in the measurement of inputs and hence opportunity costs. Even though total output might increase, the rate of production from labour inputs might actually fall (i.e., burnout) — for example, if nurses are expected to work unduly long hours as an alternative to a larger full-time nursing complement. Similarly, attention must be given to the level of productivity over time. Temporary increases in the rate of output might be achieved in the short run, but if the demands of the job lead to increases in staff turnover this will reduce productivity in the longer term. Careful analyses of production functions could be used to measure the marginal productivity of increased hours and the impact of increasing responsibilities on provider productivity. In this way analyses could be used to inform those with concerns about work overload and the problem of provider burnout.

### Summary

HHRP needs to be sensitive to demographic changes in both population and provider groups. Analyses aimed at refining and improving the way in which demographic change is incorporated into HHRP will continue to enhance health human resource policies. However, the demographic basis of much HHRP fails to consider the effects of other changes in society that impact on the need for care in the population and the provision of care. In this paper the importance of introducing a production-function approach to HHRP has been presented. In some cases, existing data may be available to complement the demographic analyses with consideration of these broader issues. However, in other cases the ability to improve existing approaches will require the collection of new data. Although collecting additional data will involve costs, this is the price of improving HHRP exercises.

### References

- Barer, M., & Stoddart, G. (1991). *Toward integrated medical human resource policies for Canada*. Report prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health. Hamilton, ON: Centre for Health Economics and Policy Analysis.
- Birch, S. (1999). The 39 steps: The mystery of health inequalities in the UK. *Health Economics*, 8, 301–308.
- Birch, S., Lavis, J., Markham, B., Woodward, C., & O'Brien-Pallas, L. (1994). *Nursing requirements for Ontario over the next twenty years: Development and*

*application of estimation methods*. Waterloo, ON: Ontario Nursing Human Resources Data Centre.

- Denton, F., Gafni, A., & Spencer, B. (1993). The SHARP computer system – A tool for resource planning in the health sector. In M. Malek, J. Rasquinha, & P. Vacani (Eds.), *Strategic issues in health care management* (pp. 45–56). Chichester: Wiley.
- Denton, F., Gafni, A., & Spencer, B. (1994). System for Health Area Resource Planning (SHARP): An application to Ontario medical school enrolment. *Canadian Medical Association Journal*, 151, 39–45.
- Denton, F., Gafni, A., & Spencer, B. (1995). The SHARP way to plan health care services: A description of the system and some illustrative applications in nursing human resource planning. *Socio-economic Planning Sciences*, 29, 125–137.
- Denton, F., & Spencer, B. (2000). Population aging and its economic costs: A survey of the issues and evidence. *Canadian Journal on Aging*, 19(Suppl), 1–31.
- Evans, R. (1984). Introduction. In R. Evans, M. Barer, & T. Marmor (Eds.), *Why are some people healthy and others not?* (pp. 3–26). New York: Aldine de Gruyter.
- Eyles, J., Birch, S., Chambers, S., Hurley, J., & Hutchison, B. (1991). A needs-based methodology for allocating health-care resources in Ontario: Development and application. *Social Science and Medicine*, 33, 489–500.
- Fries, J. (1980). Aging, natural death and the compression of morbidity. *New England Journal of Medicine*, 303, 130–135.
- Lomas, J., Stoddart, G., & Barer, M. (1986). Supply projections as planning: A critical review of forecasting net physician requirements in Canada. *Social Science and Medicine*, 20, 411–424.
- O'Brien-Pallas, L. (1993). Review of methodologies for nursing workforce planning. In *Health human resources portfolio*. Geneva: World Health Organization.

## Happenings

### **Nursing Matters: The Nursing and Health Outcomes Project of the Ontario Ministry of Health and Long-Term Care**

**Dorothy M. Pringle and Peggy White**

Outcomes are in. Mitchell (2001) notes that the MEDLINE database includes no research reports on patient outcomes for the period 1978 to 1989 but more than 700 for the period 1997 to 2000. Outcomes are in because accountability has become an important expectation of the health-care system. Outcomes provide evidence for accountability exercises. All components of the health-care system are subject to the gaze of accountability, as are all disciplines. Nursing has had little to offer in terms of hard evidence when asked to demonstrate that nurses make a difference to patient care. Over the last decade there has been increasing activity to fill this gap, with nursing identifying outcomes that demonstrate that nurses do make a difference to patients and their experience of illness and that can be systematically collected and housed on administrative databases. These databases can then serve as the source of information for studies that ask what it is about nursing that matters: numbers of registered nurses, proportion of registered nurses relative to other nursing personnel, number of full-time versus part-time nurses, and nurses' educational preparation or years of experience.

Canada is well positioned, because of the national information system maintained by the Canadian Institute for Health Information, to play a leading role in the development of databases that house nursing-

---

*Dorothy M. Pringle, RN, PhD, is Professor of Nursing, University of Toronto, Ontario, Canada. Peggy White, RN, MN, is Project Manager, Nursing and Health Outcomes Project, Ontario Ministry of Health and Long-Term Care, Toronto.*



sensitive patient outcomes. This system is not yet complete and the data that are available are fragmented, but the objective is to create information systems that, once linked, contain data on every patient episode in every health-care sector (acute care, home care, long-term care) in every province (Canadian Institute for Health Information, 1999). Nursing-sensitive patient outcomes can be integrated into these existing databases, and where necessary new databases can be created. It will then be possible to analyze patient experiences and to determine, on the basis of patient populations, what inputs are associated with better outcomes.

In this paper, we will briefly describe the status of patient outcomes and three major approaches to outcomes measurement, the background for the Nursing and Health Outcomes Project of the Ontario Ministry of Health and Long-Term Care, the decisions as to which outcomes to include and their measurement, and the process of reaching these decisions.

In 1996, the American Academy of Nursing held an invitational conference on health-care outcomes (the proceedings are reported in *Medical Care Supplement*, 35[11]). Health services researchers, insurance companies, and nurse researchers were invited to explore the status of patient outcomes and to respond to a new model linking nursing inputs and patient outcomes. The Quality Health Outcomes Model, developed by the American Academy of Nursing Expert Panel, integrated functional, social, psychological, and physical/physiologic factors along with patients' experiences, in contrast to the exclusively physiological outcomes that were the usual indicators of care (Mitchell, Ferketich, & Jennings, 1998). The Model proposed five outcomes: achievement of appropriate self-care, demonstration of health-promoting behaviours, health-related quality of life, patient perception of being well cared for, and symptom management (Mitchell et al.). The conference represents a milestone in nursing's conceptualization and commitment to outcomes research, and the proposed outcomes influenced the thinking of the group in Ontario charged with identifying nursing-sensitive outcomes for that province.

Patient outcomes that have been examined in nursing research generally fall into three categories: adverse occurrences, secondary medical diagnoses, and patient health status. Adverse occurrences, such as patient falls, medication errors, nosocomial infections, and pressure ulcers, can be linked to nursing practice but the relationships are not straightforward nor necessarily causative. For example, organizational factors may contribute more to medication errors than nursing factors



and wound infections are generally viewed as more reflective of operative technique than of post-operative care.

In 1994 the American Nurses Association initiated the Patient Safety and Nursing Quality project. This project had multiple dimensions, including the participation of 10 state nursing associations and the assemblage and analysis of data collected by the Health Care Financing Administration and Medicare for 200 hospitals in the 10 states (Rowell, 2001). The state nursing associations focused on different adverse occurrences. The New York State group found statistically significant relationships between nurse staffing and post-operative infections, urinary tract infections, pneumonias, pressure ulcers, and hospital lengths of stay; generally, shorter stays were associated with higher staffing levels and lower infection rates were associated with higher proportions of registered nurses within the nursing workforce (Rowell). An issue with the use of adverse occurrences as outcomes is the need for consistent application of definitions across units and hospitals and for consistent and uniform recording of occurrences in patient charts.

Although there is only a modest association between medical diagnoses and nursing inputs/processes, it has been the object of some research because these outcomes are easily accessible — being routinely abstracted from patient charts and housed on databases. A team from the Harvard School of Public Health (Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2001) used existing hospital discharge databases linked with financial reports or hospital staffing surveys from 799 hospitals across 11 states and a national sample of Medicare patients to examine the relationships between nursing staffing — levels of RN staffing or of overall nurse staffing — and a mix of adverse occurrences and medical diagnoses. In medical patients, they found strong and consistent relationships between both types of nurse staffing and urinary tract infections, pneumonia, length of stay, upper gastrointestinal bleeding, and shock. In major surgical patients, they found an association between staffing and failure to rescue — that is, death — among patients with shock, sepsis, pneumonia, deep vein thrombosis/pulmonary embolism, or gastrointestinal bleeding that could have been averted had the symptoms been recognized and treated promptly (Needleman et al.).

While the 1996 conference called for health status outcomes, existing research databases yield few examples of these. The reason for this is simple: indicators of health status are not routinely recorded in patient charts and abstracted onto databases. Although these types of

outcomes are found in increasing numbers of studies in which primary data are collected, the California division of the Kaiser Permanente Medical Care Program is the only health-care system to include patient health status in its databases (Ditmyer, Koepsell, Branum, Davis, & Lush, 1998). Nurses in the Kaiser Permanente HMO systematically assess functional status, patient engagement in health care, and psychosocial well-being on all patients in all sectors of their system: acute-care hospitals, home care, long-term care, and outpatient facilities; this information is abstracted and housed on the program's databases.

### **The Nursing and Health Outcomes Project**

The Ontario Minister of Health and Long-Term Care commissioned the Nursing Task Force to examine the issues created by downsizing and realignment of the health-care system. One of the recommendations of the Task Force's report, released in January 1999, focuses on the need for a funding formula for nursing based on performance standards that promote high-quality patient outcomes and on health information systems that provide comprehensive and reliable data on nursing services (Ontario Ministry of Health and Long-Term Care 1999). Clearly, an information system inclusive of relevant nursing data was the first priority and the Nursing and Health Outcomes Project was established. The mandate of this Project was to recommend a set of nursing-sensitive patient outcomes and methods for measuring them, to identify databases on which to locate them, and to establish a process for "rolling out" the recommendations to all health-care sectors. The Project was to address acute care, home care, and long-term care. Public health, psychiatric care, obstetrics, and rehabilitation were not included in its mandate.

In September 1999 the first author was appointed Director and the second author full-time Manager of the Nursing and Health Outcomes Project. Two teams have guided the Project to date. An Expert Panel on Outcomes (EPO) comprising outcomes researchers and database experts has been responsible for identifying patient outcomes that are sensitive to nursing practice and for recommending assessment methods. The Outcomes Feasibility and Outreach Committee (OFOC) comprises representatives of provincial nursing organizations including the Registered Nurses Association of Ontario, the College of Nurses, the Registered Practical Nurses Association of Ontario, and the Ontario Nurses Association. The OFOC members are responsible for examining and providing feedback on the feasibility of the outcomes

recommended by the EPO and for keeping their constituent nursing communities informed about the progress of the Project.

The EPO began by creating a framework to explicate what it believed the Ontario health-care system was trying to achieve. It identified five patient-related objectives: improved health, prevention of avoidable decline, decreased risk to health, optimized comfort, and patient satisfaction with care. It identified outcomes for the health-care system related to each objective, then developed specific nursing outcomes and tested these against the literature and the Quality Health Outcomes Model. The initial selection of patient outcomes included: functional status; therapeutic self-care; management of four symptoms (dyspnea, fatigue, nausea, and pain) and two adverse occurrences (patient falls resulting in injury and decubitus ulcers); and patient satisfaction with nursing care.

A team of researchers led by Dr. Diane Irvine Doran conducted a critical appraisal of the research literature to ensure that each of these outcomes was significantly related to nursing inputs and processes, to identify which instruments had been used to measure the variables, to examine these instruments for reliability and validity, and to recommend the most suitable instruments for each health-care sector (Doran et al., 2001).

An invitational symposium was held in March 2001 to examine the state of science of outcomes relevant to nursing and to advise on the appropriateness of the outcomes selected by the EPO. The symposium was attended by a number of international experts who had made major contributions to the 1996 conference and also by Canadian experts. A monograph of the proceedings of the symposium is available on the Project's Web site ([www.gov.on.ca/health/english/program/nursing/nursing\\_mn.html](http://www.gov.on.ca/health/english/program/nursing/nursing_mn.html)).

Both the critical appraisal exercise and the discussions at the symposium ensured the appropriateness and feasibility of the selected outcomes. The EPO was acutely aware of the limitations of its recommended set of outcomes. For example, although quality of life as an outcome surfaces regularly in discussions with stakeholders, particularly in the long-term-care sector, there is no agreement on how it should be conceptualized or measured, or on its influences in the various health-care sectors. There is agreement that quality of life is a subjective perception but no agreement on how to elicit the perceptions of the segment of the long-term-care population that is cognitively impaired. The EPO decided to recommend only those outcomes for which there are sound research linkages to nursing and which can be

routinely, reliably, and reasonably assessed by nurses in all sectors. It seemed wise to start with a limited number of outcomes in which the Expert Panel had confidence and to add others as they are shown to be relevant, rather than recommend many outcomes that could prove unworkable and unreliable.

The final set of EPO recommendations is now being tested in a series of pilot studies across the province. Nurses will assess patients' functional status using scales specific to each health sector, and patients will complete the Therapeutic Self-Care Instrument (Sidani & Irvine, 1999) and 11-point numeric symptom management scales. The amount of time to be allotted for completion of these scales is being evaluated in the pilot studies. Patient falls resulting in injury will be collected through ICD-10 CM, as will decubitus ulcers; ICD-10 CM will be phased in during 2003 in Ontario. Patient satisfaction with nursing care in the acute-care sector is collected through an annual Hospital Report jointly sponsored by the Ontario Hospital Association and the Ministry of Health and Long-Term Care. Sector-wide approaches to assessing patient satisfaction with their nursing care in home care and long-term care are currently being negotiated.

Outcomes are meaningless in the absence of a means of relating them to inputs. The OFOC has recommended a set of nursing inputs to be collected systematically. Some of these inputs, such as the number of registered nurses and registered practical nurses in a given hospital, are available on the Management Information System databases, but others need to be added, and a system for collecting these types of data and housing them on databases for home care and long-term care has yet to be established.

The Nursing and Health Outcomes Project represents a first step in an initiative that will go on for decades. In fact, once begun, the identification, addition, revision, and replacement of outcomes on administrative databases will never cease. Research will continue to inform the process. However small this beginning, it is critical to nursing's ability to use system-wide data to demonstrate that nurses matter to patients and to the achievement of important patient outcomes.

## References

- Canadian Institute for Health Information. (1999). *Health information roadmap: Responding to needs*. Available online: [www.cihi.ca](http://www.cihi.ca)
- Ditmyer, S., Koepsell, B., Bruanum, V., Davis, P., & Lush, M. (1998). Developing a nursing outcomes measurement tool. *Journal of Nursing Administration*, 28(6), 10-16.

## *The Nursing and Health Outcomes Project*

- Doran, D., Sidani, S., McGillis-Hall, L., Watt Watson, J., Mallette, C., Laschinger, H., & White, P. (2001). *The state of science: A methodological review of the literature on nursing-sensitive outcomes*. Unpublished report, University of Toronto.
- Mitchell, P. (2001). The evolving world of outcomes. *Invitational symposium: Nursing and Health Outcomes Project, March 15 and 16*. Available online: [www.gov.on.ca/health](http://www.gov.on.ca/health)
- Mitchell, P.H., Ferketich, S., & Jennings, B.M. (1998). Quality health outcomes model. *Image: Journal of Nursing Scholarship*, 30, 43–46.
- Needleman, J., Buerhaus, P.I., Mattke, S., Stewart, M., & Zelevinsky, K. (2001). Nursing staffing and patient outcomes in hospitals. Available online: [www.bhpr.hrsa.gov/dn/staffstudy.htm](http://www.bhpr.hrsa.gov/dn/staffstudy.htm)
- Ontario Ministry of Health and Long-Term Care. (1999). *Good nursing, good health: An investment for the 21st century*. Toronto: Queen's Printer for Ontario. Available online: [www.gov.on.ca/health](http://www.gov.on.ca/health)
- Rowell, P. (2001). American Nurses Association study on nursing-sensitive outcomes. *Invitational symposium: Nursing and Health Outcomes Project, March 15 and 16*. Available online: [www.gov.on.ca/health](http://www.gov.on.ca/health)
- Sidani, S., & Irvine, D. (1999). *Evaluation of the Care Delivery Model and Staff Mix Redesign Initiative: The Collaborative Care Study*. Unpublished report, University of Toronto.





# **A Survey of Web-Based Health Human Resource Planning Activities in Canada**

**Gail Tomblin Murphy and Debra Barrath**

## **Introduction**

Health Human Resource Planning (HHRP) has become a priority for Canadian researchers, policy-makers, and decision-makers. As social, economic, and technological developments propel health care into the information age, Web-based access to HHRP-related information is rapidly assuming greater significance. Convenient access to HHRP-related information is important for current and future HHRP and will continue to be a priority as the area develops and responds to new challenges. This paper identifies Web-based resources of interest to the HHRP community. It provides an overview of key Canadian HHRP activities, with a focus on nursing human resource planning.

Policy institutes, research units, governments and government agencies, professional associations and unions, think tanks, universities, and not-for-profit organizations release a number of reports that are seldom integrated into conventional literature vehicles (such as journals or bibliographic databases). The Web sites of these organizations frequently provide access to this unpublished or "grey" literature. Grey literature is defined by the US Interagency Gray Literature Working Group as "open source material that usually is available through specialized channels and may not enter normal channels or systems of publication, distribution, bibliographic control, or acquisition by book-sellers or subscription agents" (Soule & Ryan, 1995). It includes academic papers, scientific protocols, white papers, preprints, committee reports, proceedings, conference papers, research reports, standards, discussion papers, technical reports, dissertations, theses, government

---

*Gail Tomblin Murphy, PhD(c), is Associate Professor, School of Nursing, Dalhousie University, Halifax, Nova Scotia, Canada. Debra Barrath, MN, is Research Officer, Nursing Effectiveness, Utilization and Outcomes Research Unit, Faculty of Nursing, University of Toronto, Ontario, Canada.*

reports, house journals, newsletters, working papers, essays, and electronic columns. Grey publications are valued as sources of comprehensive, concrete, and up-to-date information on research findings and investigations (System for Information on Grey Literature, 2002). They provide valuable and often unique information that can rapidly inform specific scientific communities, funding bodies, and policy-makers about the results of research projects and other initiatives.

Numerous difficulties arise when researchers attempt to use grey information. First and foremost, since grey literature is not well covered by the usual electronic databases or standard publication channels, it is less readily identified and accessed than conventionally published literature (Isenberg, 1999; Soule & Ryan, 1995). Although this situation is changing as Internet distribution expands, it has been found that Web-based information tends to be ephemeral (Isenberg) — that is, material on the Web is frequently posted and removed at the discretion of site owners with little record of its existence. Second, while thousands of health-related organizations generate literature, only a fraction of that literature is of interest to the HHRP community. Third, grey literature varies widely in quality and is seldom peer-reviewed (Soule & Ryan). These limitations place a significant burden on the traditional collection stage of the research cycle. Hence, those who wish to use grey literature as a source of information must be prepared to expend more resources in collecting and processing it than they would in the case of other published material (Soule & Ryan).

The key reason for pointing out the distinction between grey literature and conventionally published materials, however, is not to focus on the unique problems of the former but rather to highlight its value as a complementary source of information. The HHRP research community's interest in grey literature stems from its potential as a source of credible information that can be accessed quickly and inexpensively. The quality of Web information is influenced by the resources available to the Web site owner to maintain current information. Visitors must critically appraise each site for the quality of its information. The exploitation of grey literature to address HHRP issues should be part of an overall literature review strategy that includes a thorough search of all information sources (Helmer, Savoie, & Green, 1999; Weaver et al., 2002). Researchers and policy-makers must consider what role grey information can play in meeting their information needs and in what subject areas it is most likely to be advantageous or productive (Soule & Ryan, 1995).

### **Currently Available Web Resources**

Among the few Web resources for accessing the grey HHRP literature are those provided by university-based research units, federal and provincial government departments and funding agencies, and professional associations. These are outlined in the Appendix. Academic research units typically use department Web pages to describe their HHRP research. Examples of such units are the Nursing Effectiveness, Utilization and Outcomes Research Unit (NRU) at the University of Toronto and McMaster University in Ontario, the Health Human Resources Unit (HHRU) at the Centre for Health Services and Policy Research of the University of British Columbia, and the Manitoba Centre for Health Policy (MCHP) at the University of Manitoba. Government departments and funding agencies also have an interest in disseminating information on HHRP activities. Health Canada, the Canadian Institute for Health Information (CIHI), and Human Resources Development Canada (HRDC) have each published reports on the Web that make HHRP information more widely available. CIHI, for example, publishes an annual report, *Supply and Distribution of Registered Nurses in Canada* (see Appendix). Professional associations such as the Canadian Nurses Association publish information on HHRP developments relevant to their discipline (e.g., the Nursing Sector Study at [www.cna-nurses.ca/pagesresources/nursing\\_sector\\_study.pdf](http://www.cna-nurses.ca/pagesresources/nursing_sector_study.pdf)). These examples are taken primarily from nursing HHRP Web sites; there are similar sites for physicians (e.g., the Physician Sector Study at [www.hrhc-drhc.gc.ca/common/news/hrib/010920.shtml](http://www.hrhc-drhc.gc.ca/common/news/hrib/010920.shtml)).

Web-based initiatives are emerging to address the need for comprehensive online databases of HHRP resources such as publications, reports, fact sheets, and research studies. Policy-makers and decision-makers have highlighted the need for enhanced knowledge transfer and uptake between research and policy sectors (Canadian Health Services Research Foundation, 2000). The authors' own site ([www.committed.to/hhrp](http://www.committed.to/hhrp)) was established as a vehicle for knowledge exchange and uptake among team members. It also functions as a means of informing other interested researchers, decision-makers, and various stakeholders about the project while providing an extensive listing of HHRP-related Web sites.

Policy-makers and decision-makers often must sift through a large body of research information in order to select those contributions that have the most direct policy relevance. Likewise, in a burgeoning field such as HHRP, researchers are constantly challenged to locate and eval-

uate material in order to identify the evidence that best meets their needs. Contemporary Web-based applications provide a sophisticated environment in which these important types of knowledge transfer and uptake can be enhanced and facilitated.

Our Web site has made significant progress in this respect by providing easy access to the HHRP-related grey literature. Systematic Internet searches are conducted weekly to locate Web sites with HHRP-related grey literature. The information is retrieved, assessed, and summarized, then listed by jurisdiction and topic. By offering a mode of communication for this hard-to-find class of literature, the Web site has the dual advantage of providing ready access to a broad range of credible grey literature and informing others about developments in the field.

New means of accessing HHRP resources on the Web include the recently launched site of the Canadian Health Services Research Foundation/Canadian Institutes of Health Research Chair in Nursing Human Resources ([www.hhr.utoronto.ca](http://www.hhr.utoronto.ca)). Hosted by Linda O'Brien-Pallas, this site is an integral part of the Chair's communications strategy in fostering a national strategy for HHRP. Through the targeting of key stakeholders via the Web site, up-to-date information is made available to those interested in helping to stabilize the nursing human resource situation in Canada and globally. Visitors to the site are able to acquaint themselves with the Chair's vision and goals as well as new initiatives such as the Dorothy M. Wylie Nursing Leadership Institute. Even at these early stages in its development, the site offers easy access to HHRP-related resources such as publications, reports, fact sheets, and studies. Doctoral fellowships, post-doctoral fellowships, and research apprenticeships for policy-makers and decision-makers are also posted. As the site evolves, new content (e.g., a Chair newsletter and online reference database) and interactive features (e.g., listserv subscriptions and discussion groups) will be added to create a dynamic Web site. It will eventually become the backbone of a virtual network to foster interdisciplinary mentorship and to help build a critical mass of policy planners, nurse administrators, and researchers with expertise in HHRP.

As researchers gain confidence in searching and assessing the Web-based grey literature, the demand for more sophisticated and user-friendly sites will continue to grow. Technical innovations such as these promise to expand knowledge transfer and uptake in a way that will ultimately enhance research productivity and greatly impact on HHRP internationally. Researchers and others interested in HHRP should be encouraged to use and to develop sites dedicated to HHRP.



## References

- Canadian Health Services Research Foundation. (2000). *Knowledge transfer: Looking beyond health knowledge transfer*. Paper presented at Looking Beyond Health conference, Toronto, October 26–27.
- Helmer, D., Savoie, I., & Green, C. (1999). *How do various fugitive literature searching methods impact the comprehensiveness of literature uncovered for systematic review?* Paper presented at Fourth International Conference on Grey Literature, Washington, October 4–5.
- Isenberg, L. (1999, Summer). Grey literature: The literature that gets left behind. *Public Health/Health Administration Section Newsletter*. Public Health/Health Administration Section, Medical Library Association. Retrieved January 4, 2002, from [www.phha.mlanet.org/summer99.html#greylit](http://www.phha.mlanet.org/summer99.html#greylit)
- Soule, M., & Ryan, R. (1995). Gray Literature – What it is, who produces it, and potential uses. Information Technology Summit, Columbus, Ohio, August 10.
- System for Information on Grey Literature. (2002). The role of grey literature. The European Association for Grey Literature Exploitation. Retrieved January 4 from [www.kb.nl/infolev/eagle/frames.htm](http://www.kb.nl/infolev/eagle/frames.htm)
- Weaver, N., Williams, J., Weightman, A., Kitcher, H., Temple, M., Jones, P., & Palmer, S. (2002). Taking STOX: Developing a cross disciplinary methodology for systematic reviews of research on the built environment and the health of the public. *Journal of Epidemiology and Community Health*, 56, 48–55.

<b>Appendix Canadian HHRP Activities</b>			
<b>Organization</b>	<b>HHRP Activity/Report</b>	<b>Description</b>	<b>Location</b>
<i>Academic research units</i>			
Centre for Health Services and Policy Research: Health Human Resources Unit, University of British Columbia	<i>Literature Review of HHR Policy/Planning Models</i>	Summary of literature on population-based HHR policy/planning models with abstracts	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru01-5W.pdf">www.chspr.ubc.ca/hhru/pdf/hhru01-5W.pdf</a>
	<i>Health Personnel Modeling 1975–1994</i>	Bibliography of health personnel modelling with abstracts (March 1995)	<a href="http://www.chspr.ubc.ca/cgi-bin/pub?id=HHRU+1995:3&amp;order=Y">www.chspr.ubc.ca/cgi-bin/pub?id=HHRU+1995:3&amp;order=Y</a>
	<i>Regional Health Human Resources Planning and Management: Policies, Issues and Information Requirements</i>	Report describing three organizational HHRP models and discussing their advantages and disadvantages	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru99-1.pdf">www.chspr.ubc.ca/hhru/pdf/hhru99-1.pdf</a>
	<i>Nursing Workforce Study, Vols. 1–5</i>	<i>Demographic context and health system structure for nursing services in Canada</i>	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru00-3nwpv1.pdf">www.chspr.ubc.ca/hhru/pdf/hhru00-3nwpv1.pdf</a>
		<i>Supply of nursing personnel in Canada</i>	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru00-4nwpv2.pdf">www.chspr.ubc.ca/hhru/pdf/hhru00-4nwpv2.pdf</a>
		<i>Inventory of nursing program enrolments and graduates in Canada by province/territory</i>	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru00-5nwpv3.pdf">www.chspr.ubc.ca/hhru/pdf/hhru00-5nwpv3.pdf</a>
		<i>Nursing workforce deployment</i>	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru00-6nwpv4.pdf">www.chspr.ubc.ca/hhru/pdf/hhru00-6nwpv4.pdf</a>
		<i>Changes in the nursing workforce and policy implications</i>	<a href="http://www.chspr.ubc.ca/hhru/pdf/hhru00-7nwpv5.pdf">www.chspr.ubc.ca/hhru/pdf/hhru00-7nwpv5.pdf</a>

**Appendix** (cont'd)

Nursing Effectiveness, Utilization and Outcomes Research Unit (NRU), University of Toronto and McMaster University	Nursing Human Resources Planning and Modeling	Studies of appropriate supply, distribution, and deployment of nurses and how to enable nurses to meet their responsibilities following health system restructuring	<a href="http://www-fhs.mcmaster.ca/nru/html/research.html#1.1">www-fhs.mcmaster.ca/nru/html/research.html#1.1</a>
	Health Human Resource Planning: An Examination of Relationships Among the Use of Nurses and Population Health in the Province of Ontario	Study to develop and test an approach to establishing, monitoring, and predicting the need for nurses based on patient requirements; will explore the relationship among Ontarians' health needs, use of nursing and hospital services, and health outcomes within a systems framework; will show the usefulness to HHRP of including variables in large-scale surveys that measure population health	<a href="http://www.chsrf.ca/docs/resinprog/ogc2000/tomblin_e.shtml">www.chsrf.ca/docs/resinprog/ogc2000/tomblin_e.shtml</a>  <a href="http://committed.to/hhrp">committed.to/hhrp</a>
Manitoba Centre for Health Policy (MCHP), University of Manitoba	<i>Needs-Based Planning for Manitoba's Generalist Physicians</i>	Report estimating the need for physicians based on age, gender, health, and socio-economic mix of the population, and comparing need with supply	<a href="http://umanitoba.ca/academic/centres/mchp/surdocs.htm">umanitoba.ca/academic/centres/mchp/surdocs.htm</a>
	<i>Issues in the Management of Specialist Physician Resources for Manitoba</i>	Report examining current supply of specialist physicians in Manitoba, incorporating Statistics Canada data to help project future requirements and analyzing access to specialists by area and socio-economic status	<a href="http://umanitoba.ca/academic/centres/mchp/reports/reports_97-00/plan.htm">umanitoba.ca/academic/centres/mchp/reports/reports_97-00/plan.htm</a>
	<i>Issues in Developing Indicators for Needs-Based Funding</i>	Report focusing on the theoretical question of how to distribute physician services for a sector in which the data are good but services are not currently distributed according to need	<a href="http://umanitoba.ca/academic/centres/mchp/reports/reports_97-00/allocat.htm">umanitoba.ca/academic/centres/mchp/reports/reports_97-00/allocat.htm</a>

<b>Appendix</b> (cont'd)			
<b>Organization</b>	<b>HHRP Activity/Report</b>	<b>Description</b>	<b>Location</b>
<i>Professional associations</i>			
Canadian Nurses Association	<i>Overview of Nursing Sector Study</i>	Overview adapted from The Nursing Labour Market in Canada: An Occupational/ Sector Study Terms of Reference; includes background information as well as the purpose, objectives, and scope of the study	<a href="http://www.cna-nurses.ca/pages/resources/nursing_sector_study.pdf">www.cna-nurses.ca/pages/resources/nursing_sector_study.pdf</a>
Canadian Medical Association	Canadian Medical Forum <i>Task Force on Physician Supply: Task Force One</i>  <i>Task Force Two: A Human Resource Strategy for Physicians in Canada</i>	Paper prepared to help stakeholders make strategic decisions to address physician supply in Canada; <i>Task Force Two</i> will examine full range of existing and emerging models for health-care delivery and assess their implications for physician supply and training	<a href="http://www.cma.ca/cma/common/displayPage.do?pageId=/staticContent/HTML/N0/l2/advocacy/Taskforce/summary.htm">www.cma.ca/cma/common/displayPage.do?pageId=/staticContent/HTML/N0/l2/advocacy/Taskforce/summary.htm</a>
<i>Organizations at federal level</i>			
Health Canada	Advisory Committee on Health Human Resources: Canadian Nursing Advisory Committee (CNAC)	The Federal, Provincial and Territorial Advisory Committee on Health Human Resources appointed 16 members to the new CNAC, whose establishment fulfils the first of 11 recommendations of <i>A Nursing Strategy for Canada</i> (Oct. 2000); CNAC's first priority is to recommend policy directions for a framework and context to improve nurses' working conditions at the provincial/territorial level	<a href="http://www.hc-sc.gc.ca/english/for_you/nursing/cnac.htm">www.hc-sc.gc.ca/english/for_you/nursing/cnac.htm</a>

## Appendix (cont'd)

	Advisory Committee on Health Human Resources: <i>Nursing Strategy for Canada</i> (ACHHR)	The Federal, Provincial and Territorial Ministers of Health, through ACHHR, released <i>A Nursing Strategy for Canada</i> at their meeting in Winnipeg on Oct. 4, 2000; this report was developed by ACHHR, which has been tasked with preparing options to strengthen HHR development	<a href="http://www.hc-sc.gc.ca/english/for_you/nursing/index.htm">www.hc-sc.gc.ca/english/for_you/nursing/index.htm</a>
	<i>Building a Stronger Foundation: A Framework for Planning and Evaluating Community-Based Health Services in Canada</i>	Important tool for planning and assessing the appropriateness and effectiveness of community-based health services and the conceptualization, utilization, management, and regulation of HHR	<a href="http://www.hc-sc.gc.ca/hppb/healthcare/Building.htm">www.hc-sc.gc.ca/hppb/healthcare/Building.htm</a>
	Applied Research and Analysis Directorate: <i>Health Human Resources: Cost Driver of the Canadian Health Care System</i>	Paper addressing the question of why the share of national income devoted to health expenditure has risen over the past 25 years	<a href="http://www.econ.queensu.ca/cea2001/papers/carr-ariste.pdf">www.econ.queensu.ca/cea2001/papers/carr-ariste.pdf</a>
Canadian Institutes for Health Information	<i>Canada's Health Care Providers</i>	Special report on HHR in Canada: compilation of current research, historical trends, and new data, findings and analysis on what we know and do not know about Canada's health-care providers as a foundation for some of today's critical and complex issues in health care	<a href="http://ecom.cihi.ca:80/ec/product.asp?dep%5Fid=3&amp;sku=01CHCP">ecom.cihi.ca:80/ec/product.asp?dep%5Fid=3&amp;sku=01CHCP</a>

Appendix (cont'd)			
Organization	HHRP Activity/Report	Description	Location
Canadian Institutes for Health Information	<i>Supply and Distribution of Registered Nurses in Canada, 2000</i>	Reference document to support RN research and planning; presents summary and detailed tables reflecting RNs in Canada, including: demographic and practice characteristics such as age and sex, basic and post-basic nursing education, year and province of graduation, post-basic education other than nursing, employment status, full-time/part-time status, location of employment, type of employer, primary area of responsibility, and position of employment	<a href="http://ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=SDRN+2000">ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=SDRN+2000</a>
	<i>Supply and Distribution of Registered Nurses in Canada, 1999</i>	Reference document to support RN research and planning; presents summary and detailed tables reflecting RNs in Canada, including: demographic and practice characteristics such as age and sex, basic and post-basic nursing education, year and province of graduation, post-basic education other than nursing, employment status, full-time/part-time status, location of employment, type of employer, primary area of responsibility, and position of employment	<a href="http://ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=SDRN+2000">ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=SDRN+2000</a>



## Appendix (cont'd)

	<i>Health Personnel in Canada, 1991 to 2000</i>	Data on various types of health professionals for 1991–2000, including figures on licensure, activity status, and number of graduates	<a href="http://ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=HP+1991+TO+2000">ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=HP+1991+TO+2000</a>
	<i>Health Personnel in Canada, 1988 to 1997</i>	Data on 19 types of health professionals for 1988–1997, including figures on licensure, activity status, and number of graduates	<a href="http://ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=HP+88+TO+97">ecomm.cihi.ca:80/ec/product.asp?dep%5Fid=8&amp;sku=HP+88+TO+97</a>
	<i>Health Personnel Database Reports</i>	Data on various types of health professionals for 1991–2000, including figures on health professionals by licensure, activity status, and number of graduates	<a href="http://www.cihi.ca/wedo/hlthpers.shtml">www.cihi.ca/wedo/hlthpers.shtml</a>
Canadian Health Services Research Foundation	Description of Priority Themes: Health Human Resources	HHR seen as the dominant issue for the next 2 to 5 years by policy-makers and managers	<a href="http://www.chsrf.ca/about/descripthemes_e.shtml#hhr">www.chsrf.ca/about/descripthemes_e.shtml#hhr</a>
	Policy Synthesis: <i>Commitment and Care: The Benefits of a Health Workplace for Nurses</i>	Policy synthesis looking at the effects of health-system restructuring on nurses' health and at ways of improving nurses' work environment	<a href="http://www.chsrf.ca/docs/finalrpts/pscomcare_e.pdf">www.chsrf.ca/docs/finalrpts/pscomcare_e.pdf</a>

<b>Appendix (cont'd)</b>			
<b>Organization</b>	<b>HHRP Activity/Report</b>	<b>Description</b>	<b>Location</b>
Human Resources Development Canada  Sector studies supporting the federal government's skills and learning agenda by helping sector representatives understand and address human resources issues and generally increasing sectoral capacity	Nursing Sector Study	Planned two-phase study. Phase 1 (20 months): comprehensive analysis of the nursing labour market based on the most accurate data available, some of which will be developed by special surveys of nurses, nursing employers, and nursing students; research phase to include development of nursing requirements under various delivery model options. Phase 2 (5 months): systematic strategy development process based on Phase 1, structured to provide input from stakeholders in the nursing sector, including provincial/territorial governments	<a href="http://www.hrdc-drhc.gc.ca/common/news/hrib/011005.shtml">www.hrdc-drhc.gc.ca/common/news/hrib/011005.shtml</a>  <a href="http://www.hrdc-drhc.gc.ca/hrib/hrp-prh/ssd-des/english/projects/nursing/index.shtml">www.hrdc-drhc.gc.ca/hrib/hrp-prh/ssd-des/english/projects/nursing/index.shtml</a>
	Physicians Sector Study	Canadian Medical Forum and other partners to lead a national human resource study of physicians, to examine a full range of existing and emerging models for health-care delivery and to assess their implications for physician supply and training	<a href="http://www.hrdc-drhc.gc.ca/common/news/hrib/010920.shtml">www.hrdc-drhc.gc.ca/common/news/hrib/010920.shtml</a>  <a href="http://www.hrdc-drhc.gc.ca/hrib/hrp-prh/ssd-des/english/projects/physicians/index.shtml">www.hrdc-drhc.gc.ca/hrib/hrp-prh/ssd-des/english/projects/physicians/index.shtml</a>

Appendix (cont'd)			
Organizations at provincial level			
Alberta Government: Premier's Advisory Council on Health	Mazankowski Report	See Part 1: "Ensuring an adequate supply and the best use of health providers"	<a href="http://www2.gov.ab.ca/home/health_first/documents_maz_report.cfm">www2.gov.ab.ca/home/health_first/documents_maz_report.cfm</a>
		Context paper: Do we have a shortage of health professionals?	<a href="http://www2.gov.ab.ca/home/health_first/documents/partI.pdf">www2.gov.ab.ca/home/health_first/documents/partI.pdf</a>
		Key recommendations of this report regarding HHRP include: "Put better incentives in place for attracting, retaining, and making the best use of health providers, develop a comprehensive workforce plan, improve workforce morale, implement alternative ways of paying physicians, and encourage health providers to implement new ways of delivering services."	<a href="http://www2.gov.ab.ca/home/health_first/documents/shortage.pdf">www2.gov.ab.ca/home/health_first/documents/shortage.pdf</a>
	<i>The Government's Response to the Mazankowski Report: Making the Best Use of Health Professionals</i>	The government's response to the Premier's Advisory Council on Health Report outlining its HHRP strategy	<a href="http://www2.gov.ab.ca/home/health_first/documents/response_maz_final.pdf">www2.gov.ab.ca/home/health_first/documents/response_maz_final.pdf</a> <a href="http://www2.gov.ab.ca/home/health_first/response_3.cfm">www2.gov.ab.ca/home/health_first/response_3.cfm</a>

Appendix (cont'd)			
Organization	HHRP Activity/Report	Description	Location
British Columbia Ministry of Health Planning: Strategic Planning and Nursing Directorate Division	The Strategic Planning and Nursing Directorate Division	Report to the Minister of Health on the Recruitment and Retention of Registered Nurses and Registered Psychiatric Nurses in British Columbia, March 2000	<a href="http://www.healthplanning.gov.bc.ca/strategic/">www.healthplanning.gov.bc.ca/strategic/</a>
	<i>Assess and Intervene: Report to the Minister of Health on the Recruitment and Retention of Registered Nurses and Registered Psychiatric Nurses in British Columbia, March 2000</i>		<a href="http://www.hlth.gov.bc.ca/cpa/publications/rpnurses/assessintervene.pdf">www.hlth.gov.bc.ca/cpa/ publications/rpnurses/ assessintervene.pdf</a>
Ontario Ministry of Health and Long- Term Care	<i>Good Nursing, Good Health: An Investment in the 21st Century – Report of the Nursing Task Force (Jan. 1999)</i>  Nursing and Health Outcomes Project	The Nursing Task Force was established to examine the impact of health-care reform on nursing and to recommend strategies to ensure and enhance quality of care through the use of nursing human resources; its Report makes short-, medium-, and long- term recommendations for improving nursing services in Ontario; the purpose of the Nursing and Health Outcomes Project, which was created in response to these recommendations, is to identify nursing- sensitive patient outcomes and their attendant nursing inputs and processes	<a href="http://www.rnao.org/html/pdf/JPNC.pdf">www.rnao.org/html/pdf/ JPNC.pdf</a>  <a href="http://www.gov.on.ca/health/english/program/nursing/nursing_mn.html">www.gov.on.ca/health/ english/program/nursing/ nursing_mn.html</a>

**Appendix** (cont'd)

Prince Edward Island Health and Social Services	Prince Edward Island Advisory Committee on Health Human Resources: <i>Health Human Resources Supply and Demand Analysis</i>	A comprehensive profile of health and social services employees in the public and private sectors, identifying demand, supply, and predicted surpluses and shortages in major occupational groups over the next 5 years; includes a dynamic human resource planning model to support collaborative planning among educators, employers, and professional associations	<a href="http://www.gov.pe.ca/photos/original/hss_nov162001_b.pdf">www.gov.pe.ca/photos/original/hss_nov162001_b.pdf</a>
Saskatchewan Health	<i>Job Satisfaction, Retention, Recruitment and Skill Mix for a Sustainable Health Care System</i>	Health WORCS was assigned the task of developing, within the context of the many factors affecting supply and demand, recommendations to help Saskatchewan Health and health employers understand their human resource challenges, and of providing examples of delivery models to help health employers meet their recruitment and retention challenges	<a href="http://www.health.gov.sk.ca/info_center_pub_WORCS.pdf">www.health.gov.sk.ca/info_center_pub_WORCS.pdf</a>
	<i>Labour Market Analysis: Saskatchewan Nursing (Nursing Supply and Demand Study)</i>	Report commissioned by the departments of Health and Post-Secondary Education and Skills Training in March 1999; the research goals were to: examine trends in the supply of nurses; examine trends in the demand for nursing; and develop a short-term forecast for the size of the imbalance between supply and demand	<a href="http://www.health.gov.sk.ca/info_center_pub_nursestudy.pdf">http://www.health.gov.sk.ca/info_center_pub_nursestudy.pdf</a>





# Sense of Self: Voices of Separation and Connection in Women Who Have Experienced Abuse

Ruth Ann Belknap

Les résultats d'études qualitatives menées auprès de survivantes de violence conjugale suggèrent que le sens du soi des femmes violentées constitue un élément fondamental dans la prise de décision de quitter la relation violente. Cette étude qualitative a été entreprise, en partie, pour identifier comment les femmes se perçoivent elles-mêmes, notamment pour mettre en lumière le discours de connexion et de séparation véhiculé dans les récits. Cet article présente les résultats des entrevues menées auprès de 18 femmes vivant en régions rurales, possédant des antécédents culturels différents et ayant vécu ou vivant encore dans une situation de violence conjugale. Les femmes ont répondu à la question suivante : « Comment vous décririez-vous à vous-même? » Les réponses ont été lues en utilisant la méthode interprétative, laquelle fait appel à la lecture des récits en s'adressant au soi et à l'entité morale. La théorie du développement moral a été utilisée dans l'élaboration du cadre de recherche. Les expériences du soi issues des récits sont présentées comme des expériences de séparation et de connexion qui sont progressivement interreliées. Les liens entre ces voix et le développement moral ainsi que les conséquences sur la pratique infirmière et la recherche à venir font l'objet d'une discussion.

The findings of qualitative studies with women who have experienced abuse by an intimate partner suggest that a woman's sense of self is a central feature in her decision to leave the abusive relationship. This qualitative study was undertaken, in part, to listen to how women describe themselves, specifically explicating voices of relational connection and disconnection within the narratives. This paper presents the findings of interviews with 18 rural women from culturally diverse backgrounds who had been or were currently in abusive relationships. The women were asked to respond to the question "How would you describe yourself to yourself?" The responses were read using the interpretive method of reading narratives for self and moral voice. The theory of moral development was used to frame the inquiry. The experiences of self that emerged from the narratives are presented as progressively relational voices of separation and connection. The relationship between these voices and moral development is discussed, as are implications for nursing practice and for future research.

Researcher: *How would you describe yourself to yourself?*

Theresa: *Well, that's a hard question, because I don't see any good in me...so I don't know. I can't even describe how I feel about myself...I feel like an empty shell.*

Theresa's powerful metaphor "empty shell" is an indication that she is experiencing both a negative sense of self and extreme disconnection

---

Ruth Ann Belknap, PhD, RN, CS, is Assistant Professor, Northern Illinois University School of Nursing, DeKalb, Illinois, USA.

from self. Previous studies have found that battered women are likely to experience a negative sense of self. Campbell (1989) found battered women to have significantly lower self-esteem than normative groups. Brendtro and Bowker (1989) report that strategies for male dominance depress the abused woman's self-image and self-confidence. In a study with Israeli women, Avni (1991) found that battered women experience a form of self-mortification that damages self and leads to serious self-doubt. Farrell (1996a) utilized a self-in-relation model to explore sense of relationship among women who have encountered abuse; this study found themes of lack of relational authenticity, emptiness, and disconnection.

The findings of several qualitative studies indicate that being in and ending an abusive relationship occur as a process and that a woman's sense of self is a central feature in that process. Mills (1985) describes loss of self and restructuring of self as stages in an abusive relationship. In Landenburger's (1989) theory of abusive relationships, submergence of self and re-emergence of self are components in a four-phase process of entrapment and recovery. Farrell (1996b) reports that sense of relationship is central to the healing process for an abused woman. Rosen and Stith (1995) report that the process of leaving an abusive dating relationship includes self-reclaiming actions. In a grounded theory study, reclaiming self emerged as the central process for survivors leaving and not returning to an abusive relationship (Merritt-Gray & Wuest, 1995; Wuest & Merritt-Gray, 1999). The literature clearly supports the notion that women experience changes in sense of self during an abusive relationship and that a process of reclaiming self occurs during recovery from an abusive relationship.

In my work with battered women, the struggles with major life decisions that I have heard the women describe sound very similar to the moral conflicts described by Carol Gilligan (1982). Specifically, I have often heard them describe what Gilligan has declared the central moral dilemma for women, the conflict between self and other.

The discussion presented here is intended to extend the body of knowledge on how abused and formerly abused women experience self, and to contribute to the discussion by adding the element of moral development.

### **Theoretical Framework**

Gilligan's theory of moral development is used to frame this inquiry. Of specific interest to this portion of the study is what she calls "the transition from goodness to truth" (1977, p. 498). According to Gilligan, this

transition occurs as the woman begins to have questions about utilizing the traditional feminine value of goodness as self-sacrifice as a basis for her moral decision-making. During the transition the woman strives to uncover her own needs. In the process of examining her own needs and those of others, she begins to ponder the consequences of self-sacrifice both for herself and for others; she also begins to reject the notion of goodness as equated with meeting the needs of others at the expense of her own needs. According to Gilligan (1982):

Although independent assertion in judgement and action is considered to be the hallmark of adulthood, it is rather in their care and concern for others that women have both judged themselves and been judged.... The "good woman" masks assertion in evasion, denying responsibility by claiming only to meet the needs of others, while the "bad woman" forgoes or renounces the commitments that bind her in self-deception and betrayal. (p. 70-71)

The central moral problem for women, then, is the conflict between self and other. Gilligan (1982) asserts that resolution of this conflict "requires a reconciliation between femininity and adulthood" (p. 71) and, furthermore, that without such reconciliation there can be no resolution of the moral problem. The feminine voice struggles to resolve this conflict between compassion and autonomy "in its effort to reclaim the self and to solve the moral problem in such a way that no one is hurt" (p. 71). In caring for women who are experiencing or recovering from abuse, it is critical that nurses and other professionals understand where the woman sees herself in relationship to others and in relationship to self. It is likely that very different interventions will be required for a woman who is struggling to reclaim her voice and trying to resolve her moral conflict through self-sacrifice, and a woman who has identified her own needs and no longer equates goodness with self-sacrifice.

This portion of the research analysis was undertaken with two purposes in mind: to listen to and record women's voices of separation and connection in the reclamation of self, and to explicate passages in these voices that indicate the transition from goodness to truth. Presented here are the findings related to the research question *What is heard in the women's voices concerning the transition from goodness to truth?*

## **Method**

Participants were recruited from rural areas and small towns in an American midwestern state. Inclusion criteria were: self-identification as abused by an intimate male partner, and willingness to be exten-

sively interviewed on this topic. Eighteen women participated, ranging in age from 25 to 51 years. They self-identified their cultural/ethnic backgrounds as follows: Greek-American, 1; White, 8; Anglo, 1; Italian-American, 1; Jewish/Hispanic, 1; Mexican-American, 3; Mexican, 1; and African-American, 2. Fourteen of the women were no longer living with the abusive partner and four were currently living with the abusive partner. Annual (family) income ranged from \$4,000 to \$55,000. For this study, abuse by an intimate partner was defined as a pattern of coercive control, within a relationship, by means of threats, emotional and/or sexual abuse, economic abuse, isolation, and/or physical violence.

The semi-structured interview method used was an adaptation of the Real-Life Moral Conflict and Choice Interview (Brown, 1988). First the woman was asked to talk in general about her life. Then the question "How would you describe yourself to yourself?" was used to prompt a dialogue about self. Then the woman was asked to describe a real-life dilemma and her response to it. The interviews were taped and transcribed verbatim by the researcher.

The strategy used in analyzing the qualitative data was that of listening for self and relational voices (Brown & Gilligan, 1990, 1992; Rogers, Brown, & Tappan, 1994; Taylor, Gilligan, & Sullivan, 1995). The developers of this strategy refer to it as a "listener's guide," as it allows the researcher to read or "listen to" the narrative for a number of interpretations. The narratives were read four times, with each reading focused on a specific research question (for further description of this method, see Belknap, 2000). In the interpretive reading presented here — that for "self" — the researcher attended to images that referred to self; how the narrator saw her choices in the conflict she described; the narrator's description of relationships, actions, thoughts, and feelings; and what the narrator perceived as at stake in the dilemma she described. The reader also specifically attended to passages that could be interpreted as representing the transition from goodness to truth. These passages were underlined and colour coded. A summary interpretation of self was written for each narrative. After all the narratives had been interpreted, they were examined for similarities and grouped thematically (with specific attention to the separations and connections described). Each group of narratives was then conceptualized as a specific "voice" and labelled accordingly.

## **Results**

From the interpreted narratives, four distinct voices of separation and connection emerged. These voices become progressively more rela-

tional across the categories, forming a continuum, as presented in Table 1.

### *Voice of Separation*

At one end of the continuum, women voiced extreme disconnection and separation, describing a self separate from self, from others, and from God. All women in this voice spoke of a sense of disconnection. They found self-description painful and difficult, and responded with disparaging adjectives and phrases, describing self as lonely, angry, and of little value. Themes of concern for self and others were conspicuously absent from or sparse in their narratives. (Because the context of each woman's life is integral to her story, each quote will include her cultural/ethnic self-identification as well as the status of her relationship with her abuser.)

Sally (self-described as White, separated from abuser) responded with a list of negative descriptors:

*Well, I've already told you I don't have a lot of self-esteem. I still feel like I'm a very heavy person [researcher observation: she was not]. I feel like I am a very weak person just pretending to be strong. I'm a very dependent person; I cling to people.*

When asked to describe herself, Theresa (self-described as Italian-American, divorced from abuser) gave a particularly striking response:



*That's a hard question because I don't see any good in me, maybe a little bit. I always see myself as a failure — you know, I never give myself credit.... So I don't know. I can't even describe how I feel about myself. Sometimes I feel like an empty shell. I feel like I put up a barrier around me and I'm afraid to let people close to me because I don't trust people. But the bottom line is, I guess, I still don't like me.*

Theresa could not say how she felt about herself. Her use of the powerful metaphor "an empty shell" describes her entire loss of self. She had no relational words for herself — only words of distance and obstruction — no feeling for self, and no connection with others.

These women also specifically voiced separation from their bodies, further indicating loss of self: "It was like my body wasn't my own"; "I became very angry...then...meek...and I just kind of went numb." A sense of separation from others was also heard: "I've lost all my friends...everyone's going to hate me"; "I can't find anybody to love me for me."

However, even in this voice of separation, thin threads of narrative that spoke to the importance of connections in the woman's life were



<b>Table 1</b> <i>Continuum from Goodness to Truth</i> 				
	<i>Voice of Separation</i>	<i>Voice of Self Separate from Self but Connected with Others</i>	<i>Voice of Self Finding Self</i>	<i>Voice of Self-Knowledge and Connection with Self and Others</i>
<i>Description of self</i>	Disparaging adjectives: "angry," "low self-esteem," "no good"	Adjectives that imply concern for others: "caring," "understanding," "good mother"	Adjectives that imply concern for others: "loving," "nurturing"	Adjectives and qualities that impart sense of self and strength: "sure of myself," "survivor," "I have self-esteem," "stronger"; and sense of caring: "caring," "loving," "compassionate"
<i>Concern for others</i>	Absent from narrative	Present in self-sacrificing way	Present; not self-sacrificing	Present; not self-sacrificing
<i>Concern for self</i>	Absent from narrative	Absent from narrative	Present but not explicit	Explicitly stated
<i>Transition from goodness to truth</i>	Not apparent in narrative	Not apparent in narrative; goodness as self-sacrifice is specifically voiced	Passages reflecting criticism of self-sacrifice and awareness of own needs: "too easy-going; I need to speak out more"	Clear articulation of importance of own needs: "I've learned I have to put myself first"
				
<b>Goodness</b>			<b>Truth</b>	



also heard. Sally described what happened following a violent episode with her husband:

*I called my best friend. I mean, calling the police completely slipped my mind, because I needed somebody to talk to. I didn't know what was going on. I wanted somebody to come and help me.*

The person Sally identified as being able to help was her friend. The help she was seeking, clearly, was a connection, someone who would understand.

None of the narratives in this group included statements that would indicate a transition from goodness to truth as described by Gilligan (1977). These women expressed no concern for self and made little reference to concern for others.

### *Voice of Self Separate from Self but Connected with Others*

The voice represented in the next cluster of narratives is that of self separate from self yet connected with others. When asked to describe themselves, women in this voice chose adjectives that imply concern for others ("understanding," "caring," "good mother"). This group of women articulated a clear identification with goodness as expressed by self-sacrifice. Their descriptions included no references to consideration for self. These women also voiced a clear sense of disconnection of self from self.

***Identification with goodness as self-sacrifice.*** Eva (self-described as Mexican-American, separated from abuser for many years and married to non-abusive man) most clearly articulated the societal prioritizing of concern for others. When asked to describe herself, Eva responded:

*An understanding person that really doesn't take care of my own needs but puts other people's needs in front of mine. Like something's always telling me, oh, you know, leave your stuff for last, so nobody will judge you or something.*

Eva was aware that she would be judged negatively if she put herself first. Her sense of self separate from self, as reflected in her use of the second person when referring to herself, was also detected in other passages, in which Eva discussed her feelings of shame and her sense of being judged.

Estella (self-described as Mexican, married to abusive man) articulated the notion of goodness as self-sacrifice in describing her struggle to choose between her husband and her mother, a choice forced on her

by her husband. Here also, there was no evidence of consideration for self. Estella said, "When you marry you owe your kids and your husband." She further explained the near impossibility of her being a "good woman": "If I choose my mom I am a bad...wife; if I choose my husband I am a bad daughter." For Estella, choosing self was not an option.

*Sense of self separate from self.* The voice of disconnection from self was also evident in this cluster of narratives. The sense of self separated from self was heard as the women referred to themselves in the second person. When speaking about herself, Lenore (self-described as Anglo, married to abusive man) said: "You always worry about the damage [done to children]...you must stand up for your children... You can't think straight; they [the abuser] keep you confused."

These women also gave specific examples of disconnection — a sense of self separated from self. Estella's words on this were very direct:

*I find myself now more like...my mind is sleeping... I listen to him, I listen to my mom and...I have learned to disassociate myself from what they say.... I just feel like I'm disassociating a lot...like if I close my mind [he] can be bitching and screaming and yelling, and I'm there but I'm not thinking about what he's saying. ...sometimes if I listen to him I find myself being hurt, I'm ready to cry or I'm going to slap the heck out of him. And I don't like to do it, I don't like to cry, I don't like to slap him...disassociating myself is just like I go blank.*

Eva also described this sense of disconnection: "I try to put on a front for everybody all the time now so nobody will know anything." Similarly, Lenore expressed a need to conceal. In describing herself, she said, "It's sad, though, most of the times, you know...crying on the inside."

Estella "disassociated" to avoid being hurt by or reacting to the abuse, Eva "put on a front," and Lenore was "crying on the inside." All of these descriptions indicate a sense of self separated from self.

The women who spoke in the voice of self separate from self talked of the importance of caring for others, concern for others, and connection with others. For them, self-sacrifice was something that was necessary to fulfil their obligation to others. They did not extend the obligation to themselves. These narratives did not include passages indicative of the transition from goodness to truth.

### *Voice of Self Finding Self*

Next along the continuum is the voice of self finding self. The women in this voice described themselves using positive adjectives such as

"caring," "good mother," "understanding," and "very loving and very nurturing." They also indicated that they were thinking about themselves in new ways, becoming aware of the needs of the self. These narratives reveal a criticism of self-sacrifice and passages indicative of the transition from goodness to truth.

Keesha (self-described as African-American) was actively working on forming a connection with herself. She had begun to keep a journal and brought it with her to the interview. Keesha's interview took place a few weeks after she had left her abuser. She was living in a safe house and spoke of being very much afraid for her life because the police could not locate her abuser to arrest him. Even though she was in hiding and occupied with developing a plan to protect herself and her children, she was reaching a new level of self-understanding. She was beginning to see herself as a strong woman able to make self-protective decisions as well as care for herself and her children. When asked to describe herself, she began to cry, very quietly. The subject was clearly painful to her. I could see the pain in her eyes, but I could also see that it was very important to her that the matter had been raised. Keesha began her description of herself slowly and quietly:

*That I'm a very [pause] truthfully I'm a very vulnerable person, that [pause] when I say things don't matter, such as, like, when he would hurt me or something, when I said it didn't matter it really did matter. I'm caring, I think. I'm caring. I'm a good mother. Even though he beat me in the head a lot, sometimes I forget things, but I feel like I'm intelligent, you know. And [pause] I think that I'm the type of person that's strong enough to do whatever is necessary to keep me happy, whatever I think that is. [pause] I don't know.*

She began by describing some painful truths about herself, then said that she had always thought of herself as someone who could not leave an abusive relationship. Later, she indicated that she now viewed herself in a more caring and connected way:

*But in reality I'm actually doing it...I'm going through it...there's always a tomorrow... So I just, I was hoping I [would get] through it with my life, and I did.... I feel like I am strong. I am strong. I mean...I've got a plan and I've got goals for my future.... I can...do anything I put my mind to, you know. I can.*

*This time I want to do it the right way by taking care of some goals, personal goals for myself, first, and then maybe I can include somebody else in my life, you know, like a significant other or whatever.*

Putting self before the relationship was a transition for Keesha: "I mean, there was a time when the most important conflict or whatever was that I loved him and that was greater than him beating the shit out of me."

Keesha's description illustrates the transition from goodness to truth in a rather dramatic and frightening way.

The women who spoke in the voice of self finding self described an awakening to one's own needs. At times the process was painful and frightening, yet this voice conveyed a sense of hope. These women were legitimizing their needs and beginning to see the negative impact that self-sacrifice had made on their lives.

### *Voice of Self-Knowledge and Connection with Self and Others*

Narratives clustered at the most relational end of the continuum voiced a clear sense of self-knowledge and of caring and connection. When asked to describe themselves, the women in this voice chose adjectives and phrases indicating concern for both self and others. These narratives also included clear indications of the transition from goodness to truth.

The most striking similarity among these narratives was the positive language used by the women in describing themselves: "I'm happier...I like myself"; "I'm proud of myself. I'm a good person...have a good sense of humour"; "I'm fun-loving...I like to go out and have fun"; "I think I'm a pretty nice person."

In their self-descriptions, the women identified strengths: "I'm more sure of myself"; "I know that I'm a survivor now. I can get through anything if I put my mind to it"; "If you cross me, look out, 'cause all hell's gonna break loose!"; "I'm a lot better, a lot stronger...I have self-esteem."

*Concern for others and self.* In her description of herself, each woman spoke of her ability to care for others. Natalie (self-described as Greek-American, separated from abuser for many years and married to non-abusive man) said, "I'm a very caring person. I help a lot of people." Barbara (self-described as White, divorced and living with non-abusive partner) responded, "I'm caring, loving. I have a lot of compassion and understanding for other people." Lydia (self-described as Mexican-American, divorced and married to non-abusive man) said, "I'm very giving, very nurturing." These women did not characterize caring as self-sacrifice. They described a very different phenomenon: gaining strength through caring, as illustrated in Barbara's narrative:

*But months after that I became more self-assured. I developed from a very low self-esteem to a very high self-esteem. I was proud of myself because I cared enough about someone, meaning my little girl, to put her above everything else — my feelings, his feelings — and did what was best for*

*her. I'm very proud of myself now, you know. And I'm a lot stronger because of it. Because now, in any situation, whether it be work, at home, whatever, I say exactly what is on my mind, and if people don't like it that's too bad. I held things in and was afraid to speak for fear of getting hit, kicked, beaten, anything, for 7 years, and I'm not going to do that any more, you know. So I've come a long way, long way.*

Barbara's connection with her daughter gave her the strength to speak out and get out. Self-esteem, pride, and strength grew from her connection with her daughter and led to a connection with her true self.

When asked to describe self, the women who spoke in this voice indicated a belief that caring for and helping others requires awareness of one's own needs. Lauren (self-described as White, separated from abuser) responded, "I kind of try to...be there for people, but I've learned I have to put myself first too." Missy (self-described as White, married to abusive man) said, "I'll do anything in the world to help you out, within my limits." Lydia's response indicates an awareness of the need to continue developing concern for self:

*I feel like I want to please everybody and...make everybody happy. And I know that's impossible, but...that's my problem.... I still have some trouble about being passive, allowing people to...run my life. Not as much as they used to...I won't let them. But I...think I understand it better. I work on it every day.*

**Transition from goodness to truth.** At this end of the continuum, the narratives also included passages that were interpreted as representative of the transition from goodness to truth. Both Barbara and Lauren had left the relationship even though they still loved their partner. They described the relationship as abusive and described self in the relationship as self-sacrificing. Barbara (self-described as White, living with non-abusive man) articulated a moment of transition after she had left the relationship:

*Through learning, through getting to know me, I guess. I learned from reviewing my home life, the way I was raised, the way my parents were, you know, and then comparing that and everything that my counsellor and I talked about and...reliving, and going over and over my relationship. It finally came to me: Hey, it wasn't me. It was not me. I shouldn't have been trying to bend over backwards to please him. What I was doing was OK, it was fine, you know, I didn't have to give in to everything he wanted...it was just excuses he was giving to hit me. But that took a long time in coming.*

In this passage Barbara describes the process of connecting with self, "getting to know me." This connection helped her to reject the notion



of goodness as self-sacrifice and to view her actions as "fine"; it was no longer necessary to "bend over backwards to please him."

Lauren struggled with a relational pull. She "wanted to be a family; I didn't want to do it on my own." In her narrative she described having sacrificed herself for the relationship. Transition is evident in her voice in this passage: "Yet I felt that the way it was going, all it was doing was hindering me and pulling me back and I couldn't go forward with things that I wanted." Lauren left the relationship to "go forward." She described herself as capable and able to "speak up." Lydia voiced transition in this way: "I've always put their [the children's] feelings first. But I'm not doing it any more. I don't know if it's right or wrong but I can't...I've come to the point in my life that I'm going to say no."

The women who voiced a sense of self-knowledge usually spoke of the importance of caring; they found strength and self-knowledge in their connection with others. Each narrative in this voice was interpreted as reflecting the transition from goodness to truth and as including self in the circle of care and concern.

### Discussion

In summary, when the findings on separation and connection in the voices of women who have experienced abuse were clustered thematically, four constructs of voice emerged. Due to the cross-sectional design of this study, interpretation that implies progression is made with caution. However, it is noteworthy that as the women began to include connections and relationships in their descriptions of self, they also progressed from very negative to positive descriptions of self. This finding supports the assertions of self-in-relation theorists regarding the importance of relationships to a woman's sense of self (Surrey, 1991).

Statements indicating engagement in the transition from goodness to truth closely aligned with the woman's experience of self. As the women began to experience self-in-connection rather than self-separate, they demonstrated a corresponding movement towards the transition from goodness to truth. According to Gilligan (1977), this transition facilitates movement to a level of moral development that she terms a "morality of non-violence," in which one's obligations apply to both self and others. A morality of non-violence suggests that a woman faced with a moral choice will consider her own needs as well as the needs of others, and will, in turn, choose an action that is caring and responsive to both the needs of self and the needs of others.



### *Implications for Nursing Practice and Future Research*

It is argued elsewhere (Belknap, 1999) that women view the decision of whether to leave an abusive relationship as one of moral conflict and, furthermore, that decisions made in the context of abuse are coerced. Therefore, decisions that appear to be self-destructive may indeed be life- and self-preserving when viewed from the perspective of moral conflict/moral choice. The dilemma concerns the central moral conflict for women, that between self and other.

The findings of the present study indicate that women who are in the process of transition, or who have rejected the notion that goodness equals self-sacrifice, have progressed to a more positive view of self. It seems reasonable to suggest that these women are also likely to make decisions that preserve the self. The tension between caring for others and caring for self is mediated when women begin to view their choices as not either/or but, rather, based on sense of self-worth.

Because women experience the decision to stay or leave as moral conflict, it is critical that nurses understand the process of moral-conflict resolution (Belknap, 1999). According to Landenburger (1993), a woman in the enduring phase of an abusive relationship feels responsible for the abuse and tries to cover it up, consistent with the stage of moral development in which goodness is equated with self-sacrifice. In order to help women to name the abuse and to become self-protective, it is important that we foster the transition from goodness to truth, as described by Gilligan (1977). It is through this transition that a woman begins to scrutinize the logic of self-sacrifice and to deliberately uncover her own needs. Once the transition is made, the woman rejects the notion of goodness as self-sacrifice and includes in her reasoning an obligation to herself as well as to others. This inclusion of self reconciles the disparity between selfishness and responsibility, freeing the woman to act in her own behalf and to regard the action as morally correct.

The findings of the present research suggest that connection with others is important in this transition within moral development. Interventions that encourage connection are essential. Encouraging women to explore the means by which they reach out to others, and to make connections where none exist, will help them to see themselves in a more positive light, thus leading to a view of self as worthy of care and protection.

Further systematic inquiry is appropriate at this juncture. Attention should be focused on the role that nurses can play in facilitating the connection with self and with others, including the emerging legit-

imization of the needs of self. Inquiry should also be extended to assessing the effectiveness of such strategies in helping women to live lives in which the needs of self are fully recognized and attended to.

## References

- Avni, N. (1991). Battered wives: The home as a total institution. *Violence and Victims*, 6(2), 137-149.
- Belknap, R.A. (1999). Why did she do that? Issues of moral conflict in battered women's decision making. *Issues in Mental Health Nursing*, 20, 387-404.
- Belknap, R.A. (2000). Eva's story: One woman's life viewed through the interpretive lens of Gilligan's theory. *Violence Against Women*, 6, 586-605.
- Brendtro, M., & Bowker, L.H. (1989). Battered women: How can nurses help? *Issues in Mental Health Nursing*, 10, 169-180.
- Brown, L.M. (Ed.). (1988). *A guide to reading narratives of conflict and choice for self and moral voice*. Monograph #1. Cambridge, MA: Center for the Study of Gender, Education and Human Development, Graduate School of Education, Harvard University.
- Brown, L.M., & Gilligan, C. (1990, August). Listening for self and relational voices: A responsive/resisting reader's guide. In M. Franklin (Chair), *Literary Theory as a Guide to Psychological Analysis*. Symposium held during annual meeting of the American Psychological Association, Boston.
- Brown, L.M., & Gilligan, C. (1992). *Meeting at the crossroads*. Cambridge, MA: Harvard University Press.
- Campbell, J.C. (1989). A test of two explanatory models of women's responses to battering. *Nursing Research*, 38(1), 18-24.
- Farrell, M. (1996a). The sense of relationship in women who have encountered abuse. *Journal of the American Psychiatric Nurses Association*, 2, 46-53.
- Farrell, M. (1996b). Healing: A qualitative study of women recovering from abusive relationships with men. *Perspectives in Psychiatric Care*, 3(3), 23-32.
- Gilligan, C. (1977). In a different voice: Women's conceptions of self and of morality. *Harvard Educational Review*, 47, 481-517.
- Gilligan, C. (1982). *In a different voice*. Cambridge, MA: Harvard University Press.
- Landenburger, K. (1989). A process of entrapment in and recovery from an abusive relationship. *Issues in Mental Health Nursing*, 10, 209-227.
- Landenburger, K. (1993). Exploration of women's identity: Clinical approaches with abused women. *AWHONN's Clinical Issues in Perinatal and Women's Health Nursing*, 4, 378-384.
- Merritt-Gray, M., & Wuest, J. (1995). Counteracting abuse and breaking free: The process of leaving revealed through women's voices. *Health Care for Women International*, 16, 399-412.
- Mills, T. (1985). The assault on the self: Stages in coping with battering husbands. *Qualitative Sociology*, 8(2), 103-123.

- Rogers, A.G., Brown, L.M., & Tappan, M.B. (1994). Interpreting loss in ego development in girls: Regression or resistance? In R. Josselson & A. Lieblich (Eds.), *The narrative study of lives*. Newbury Park, CA: Sage.
- Rosen, K., & Stith, S. (1995). Women terminating abusive dating relationships: A qualitative study. *Journal of Social and Personal Relationships*, 12(1), 155-160.
- Surrey, J. (1991). The self-in-relation: A theory of women's development. In J. Jordan, A. Kaplan, J. Miller, I. Stiver, & J. Surrey (Eds.), *Women's growth in connection* (pp. 11-26). New York: Guilford.
- Taylor, J.M., Gilligan, C., & Sullivan, A.M. (1995). *Between voice and silence: Women and girls, race and relationship*. Cambridge, MA: Harvard University Press.
- Wuest, J., & Merritt-Gray, M. (1999). Not going back: Sustaining the separation process of leaving abusive relationships. *Violence Against Women*, 5(2), 110-133.

### **Author's Note**

This paper is a portion of my doctoral dissertation, *My freedom, my life: Voices of moral conflict, separations, and connections in women who have experienced abuse*, Wayne State University. I am grateful to the women who participated in this research by sharing details of their lives. Names and other identifying characteristics have been altered to obscure identity.



## **Nurses Begin a National Plan for the Integration of Supportive Care in Health Research, Practice, and Policy**

**Lorna Butler, Barbara Love, Marlene Reimer,  
Gina Browne, Barbara Downe-Wamboldt,  
Roy West, and Valerie Banfield**

La demande à l'égard des services en matière de santé et de service social n'est pas liée au type de maladie ou à sa gravité, mais plutôt aux caractéristiques socio-économiques, cognitives et affectives de la personne atteinte, ainsi qu'aux circonstances relatives au milieu. On a organisé un atelier sur les soins de soutien avec les objectifs suivants : favoriser un milieu de recherche vigoureux, apporter des nouvelles connaissances, établir un programme de recherche intégré, attirer l'attention sur l'évolution du système de santé et prévoir les défis à venir. D'abord organisé pour répondre au mandat de recherche établi pour les Instituts canadiens de recherche en santé, l'atelier a débouché sur une vision élargie, englobant les volets défense des droits, système d'information, surveillance et élaboration des politiques exigées par les structures institutionnelles, communautaires, bénévoles, du secteur privé, de la famille et de la prestation des services. L'élaboration d'une stratégie nationale en matière de soins de soutien permettra aux Canadiens et aux Canadiennes aux prises avec la maladie et l'incapacité à relever les défis de la vie quotidienne; elle favorisera en outre la participation des chercheurs et chercheuses, des cliniciens et des cliniciennes, des groupes de défense des droits et des personnes aux prises avec des problèmes de santé.

The demand for and use of health, social, and other human services is related not to the type or severity of disease but rather to a person's socio-economic, cognitive, and emotional characteristics and environmental circumstances. A workshop on supportive care was held to promote a robust research environment, the creation of new knowledge, the setting of an integrated health research agenda, a focusing of attention on the evolving health-care system, and anticipation of emerging health challenges. While the workshop

---

*Lorna Butler, PhD, is Associate Professor, School of Nursing, Dalhousie University, Halifax, Nova Scotia, Canada. Barbara Love, MHSc, is Chair, Pediatric Oncology Nursing Curriculum, McMaster University, Hamilton, Ontario, Canada. Marlene Reimer, PhD, is Associate Professor, School of Nursing, University of Calgary, Alberta, Canada. Gina Browne, PhD, is Director, System-Linked Research Unit on Health and Social Service Utilization, McMaster University. Barbara Downe-Wamboldt, PhD, is Director, School of Nursing, Dalhousie University. Roy West, PhD, is Associate Dean, Division of Community Medicine, Memorial University of Newfoundland, St. John's, Canada. Valerie Banfield, MN, is Nurse Educator, Queen Elizabeth II Health Sciences Centre, Halifax.*

was intended to address a research mandate for the Canadian Institutes of Health Research, a larger vision emerged, to include advocacy, information system, surveillance, and policy development required by institutional, community, voluntary, private sector, family caregiver, and provider systems. The development of a national supportive care strategy will enable Canadians with disease and disability to live with all of their challenges, and could engage researchers, clinicians, advocacy groups, and people experiencing major health challenges.

## **Introduction**

The purpose of this article is to describe the process of developing a national supportive care strategy across a spectrum of chronic conditions and circumstances. It is postulated that supportive care is an important issue cutting across many disease entities and is worthy of funding from the Canadian Institutes of Health Research as it is relevant to the CIHR's research mandate. To reach an acceptable level of knowledge and expertise in supportive care, we must initiate research into society's treatment of the chronically ill throughout the entire continuum of care, from prevention through diagnosis, treatment, support, and palliation. Education- and practice-related research must also recognize that chronic illness is but one of the reasons why high users of services carry a significant cost to society. Using cancer as a context for discussion, however, the National Cancer Institute of Canada (NCIC) has made a number of recommendations in support of intersectoral collaboration through research (June 1998). The use of a framework to produce research across disciplines is essential to the sharing of knowledge. The NCIC recommends the Canadian Framework for Cancer Control (Till, 1996), thereby affirming the importance of coordination between research and education at all levels and the need for leadership and mobilization of both academic and community resources. Adequate funding mechanisms and support for research into dissemination initiatives will lead to improved quality of life for communities at risk for chronic illnesses such as cancer.

## **Background**

In April 2000 the CIHR was established with a mandate to "provide new opportunities for health researchers through the introduction of new programs which will emphasize collaboration, capacity building, partnerships and translation of research information into improved health and health care" (Health Canada, 2000). The federal government provided the established national funding agencies with specific funds in support of these objectives: to help the research community plan col-



laborative projects such as a workshop/networking program to promote multi- and interdisciplinary research linkages.

Supportive care research traditionally has been under-funded and has lacked a coherent, organized approach to its conduct and dissemination. Typically, it has been carried out by busy clinicians and academics who have not been released from their workloads in order to concentrate on a program of research and have not been funded to synthesize and disseminate results and thus effect policy and service delivery. It is fragmented, disconnected, and episodic. Dissemination and utilization are further complicated by the existence of multiple delivery systems, since supportive care is often provided by those with little research training. Also, there is a dearth of supportive care research on culturally sensitive needs. Much of the work done to date has been disease-specific and separate from the economic evaluation of interventions. It is now being shown that supportive care interventions across the spectrum of diseases, ages, genders, cultures, and circumstances are sufficiently effective and efficient to justify supportive care as a field of inquiry pertinent to a cross-section of research endeavours (Browne, Watt, Roberts, Gafni, & Byrne, 1997b; Roberts et al., 1995). The demand for and use of health, social, and other human services is related less to disease type or severity than to a person's socio-economic, cognitive, and emotional characteristics in the context of their environmental circumstances. The accumulation of stressors in the absence of the supports that drive health-seeking behaviour results in the utilization of insured services, however inappropriate (Browne et al., 1999).

Supportive care research is central to the mission of the CIHR and the institutes it comprises. Nursing's vision for supportive care aligns closely with the objectives of the CIHR.

It was proposed that a workshop be organized to promote a robust research environment, the creation of new knowledge, the setting of an integrated health research agenda, the focusing of attention on the evolving health-care system, and the anticipation of health challenges as they emerge. However, a wider vision of supportive care would extend beyond the research and training perspective of the CIHR to include advocacy for a supportive care information system, surveillance, and policy development, as required by institutional, community, voluntary, private sector, family caregiver, and provider systems.

The first two authors were charged with the preparation of a summary report of the workshop proceedings. Over a period of 2 months, iterations of the report were circulated among the workshop

participants for refinement. To foster collaborative strategic planning in support of the CIHR, various recommendations emerging from the workshop were identified as within the mandate of existing health-related organizations. Small task forces were assigned to forge links with these organizations in order to develop collaboration and partnerships with the CIHR for the purpose of promoting supportive care research. The recommendations were incorporated into the final draft of the proceedings.

## **Present State of the Knowledge**

### ***Importance of Partnerships***

Complex societal issues such as those related to chronic illness and disability require a variety of knowledge and skill sets. Knowledge that is acquired, synthesized, and disseminated through partnerships with agencies, academic bodies, government, and the public is more likely than other types of knowledge to be effective in changing the behaviour of both providers and members of the public. Partnership facilitates the development and delivery of cost-effective services and support that are tailored to people's needs and that thus enhance people's ability to live with their circumstances, including illness. Improved patient outcomes and decreased expenditures on care are dependent upon the dissemination and utilization of innovative approaches to early detection, assessment, diagnosis, treatment, rehabilitation, palliation, and bereavement support, as well as to other determinants of overall health, such as personal circumstances.

Community (service)/university(research) alliances are being encouraged, with a view to promoting the convergence of scientific curiosity and social responsibility: "Academic independence can be balanced with involvement, rigor with relevance, freedom with social responsibility, security with risks attached to opportunity, impartiality with advocacy and empirical knowledge with experiential wisdom" (Browne, Watt, Roberts, Gafni, & Byrne, 1997a, p. 129). The role of consumers, such as their characteristics and circumstances that might predict their use of and response to screening, treatment, and palliative services, has received less attention in these strategic alliances. However, pilot projects have been carried out (Johnston, Murnaghan, Buehler, & Nugent, 1998).

A number of disease-related organizations, such as the Canadian Mental Health Association and the NCIC, have identified the need for

partnerships in the dissemination of research and the use of evidence-based information. A shift is now occurring in the end-user requirements of the system. Patients and families are no longer victims of a disease; rather, they are survivors who wish to be informed consumers of health and social services (Johnston & Short, 1999). They need to know what questions to ask, what information they require, and the extent of their problems, and their health professionals need to have the most current information in order to provide them with the best possible care.

### *Determinants of Health-Service Utilization*

The major determinants of health are those factors that together form one's capacity to respond to one's circumstances, such as through the utilization of health services. They are understood to be closely related to socio-economic situation, employment, degree of social support, and coping and cognitive ability (including the meaning given to illness). The capacity to respond to one's circumstances plays a greater role in health and service utilization than type or stage of disease, prognosis, or treatment (Arpin, Fitch, Browne, & Corey, 1990), and therefore in degree of reliance on the intersectoral service system (Browne et al., 1994).

As a disease with high mortality and morbidity rates, cancer represents a great economic burden. *Canadian Cancer Statistics* (Canadian Cancer Society/National Cancer Institute of Canada [CCS/NCIC], 2001) reports that each year, as the population ages and increases in size, the number of new cancer diagnoses increases; it predicts 134,000 new cases of cancer and 65,300 cancer deaths for Canada in 2001. Health Canada's Cancer Bureau estimates that if current trends continue the number of new cancers will increase by another 70% by the year 2010 (CCS/NCIC, 1999). In 1993 the economic burden of cancer in Canada, in both direct and indirect costs, exceeded \$13 billion (Moore, Mao, Zhang, & Clarke, 1997). It is only reasonable to expect that this figure will climb as the incidence of cancer rises. These facts, combined with the mounting pressure on the health-care system to contain and reduce costs, point to the need for evidence-based interventions that will produce the best outcomes in terms of both health and expenditures. Consequently, economic analysis has been established as an important tool in the planning, management, and evaluation of health care.

## **Workshop Process**

The invitational workshop in supportive care research was held in May 2000. Using cancer as the model, the workshop set out to create a template for supportive care research by focusing on two outcomes: a national research agenda that is groundbreaking in its approach to multidisciplinary and intersectoral supportive care research, and expert support and guidance for the mobilization of regional research teams to implement the national research agenda.

Workshop participants were noted researchers and advocates for the enhancement of quality of life and recognition of the supportive care needs of patients and families. They were a multidisciplinary, intersectoral group: health professionals, researchers, graduate students, and representatives of the private, public, and voluntary sectors. This seemingly broad inclusion of individuals supports CIHR's objectives. The workshop represented 2 days of vigorous small-group debate and in-depth plenary discussions using a consensus-building process. The group adapted the Canadian Cancer Control Strategy's (1999) definition of supportive care/rehabilitation, as follows:

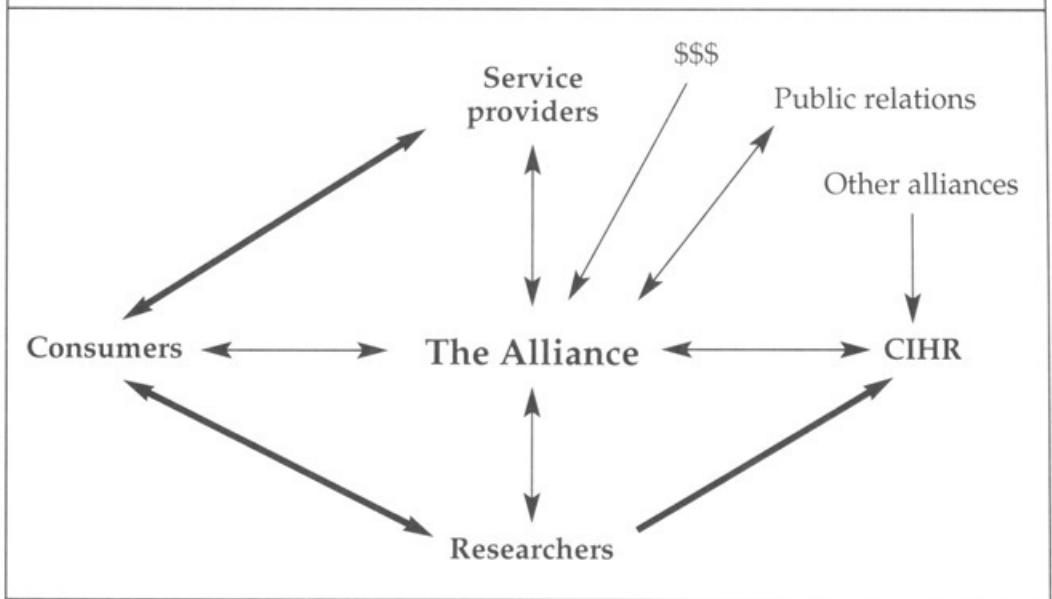
The provision of the necessary services as defined by those living with or affected by an illness to meet their physical, social, emotional, informational, psychological, spiritual and practical needs throughout the spectrum of the illness experience. These services must be available during the diagnostic, treatment and follow-up phases and encompass issues of survivorship, palliative care and bereavement. The breadth and complexity of supportive care/rehabilitation demands that a range of disciplines and organizations work together to provide the necessary services. (p. 7)

The group agreed to broaden the supportive care template by examining the issue across disciplines, sectors, and diseases. To this end, it assumed the task of supportive care advocacy from the perspective of chronicity (see Figure 1). A forward-thinking and achievable vision was developed: "All Canadians with disease and disability receive timely supportive care in the right amounts and duration to enable healthy living with all their challenges." The participants agreed that "the timing is right" for supportive care research to receive the attention it needs in our restructured health-care system. A readiness for action was considered critical.

## **Integrating Supportive Care Research Within the CIHR**

In the 21st century, innovation and creativity will be required to effectively manage the burden of chronic disease on the health-care system.

**Figure 1** *Supportive Care Research Alliance*



Inherent in the present restructuring of health-care delivery is a conceptual shift in considering end-user involvement. It is through intersectoral and multidisciplinary collaboration that research in supportive care will be most effective and efficient. This ideal was derived from the CIHR's guiding principles.

A comprehensive approach, from the basic sciences to supportive care interventions, will be taken in answering the following questions, with a view to advancing research in supportive care that is inclusive of family and other care providers throughout the trajectory of chronic illness:

***Increasing supportive care capacity.*** How can we develop criteria for identifying weaknesses and strengths in supportive care capacity in Canada? How can research be enhanced and strengthened regionally/locally and in underdeveloped areas of health research?

***Promoting the development of interdisciplinary and intersectoral research.*** What are the best means of developing domestic and international partnerships? What are the best program mechanisms? What interdisciplinary practices should be encouraged? How can we improve or develop partnerships with provincial governments, municipalities, and community groups?

***Dissemination and synthesis of research.*** How can researchers improve the translation, dissemination, and synthesis of research results for the benefit of health care and economic development? How



should research results be made available to the front-line workers and volunteers who provide much of supportive care and to the media?

*Role of an institute and its participants.* What should be expected of a member of an institute? Will expectations concerning supportive care differ for a researcher, a government official, a health professional, a member of an advisory group, and a member of a health charity? How should the frequently multiple roles and responsibilities of researchers be managed and rewarded?

*Development of world-class researchers and projects.* How can research leaders develop a pyramid of world-class researchers and projects? How can the institutes create and maintain the environment and conditions necessary for the development of world-class supportive care research in Canada?

### The Vision

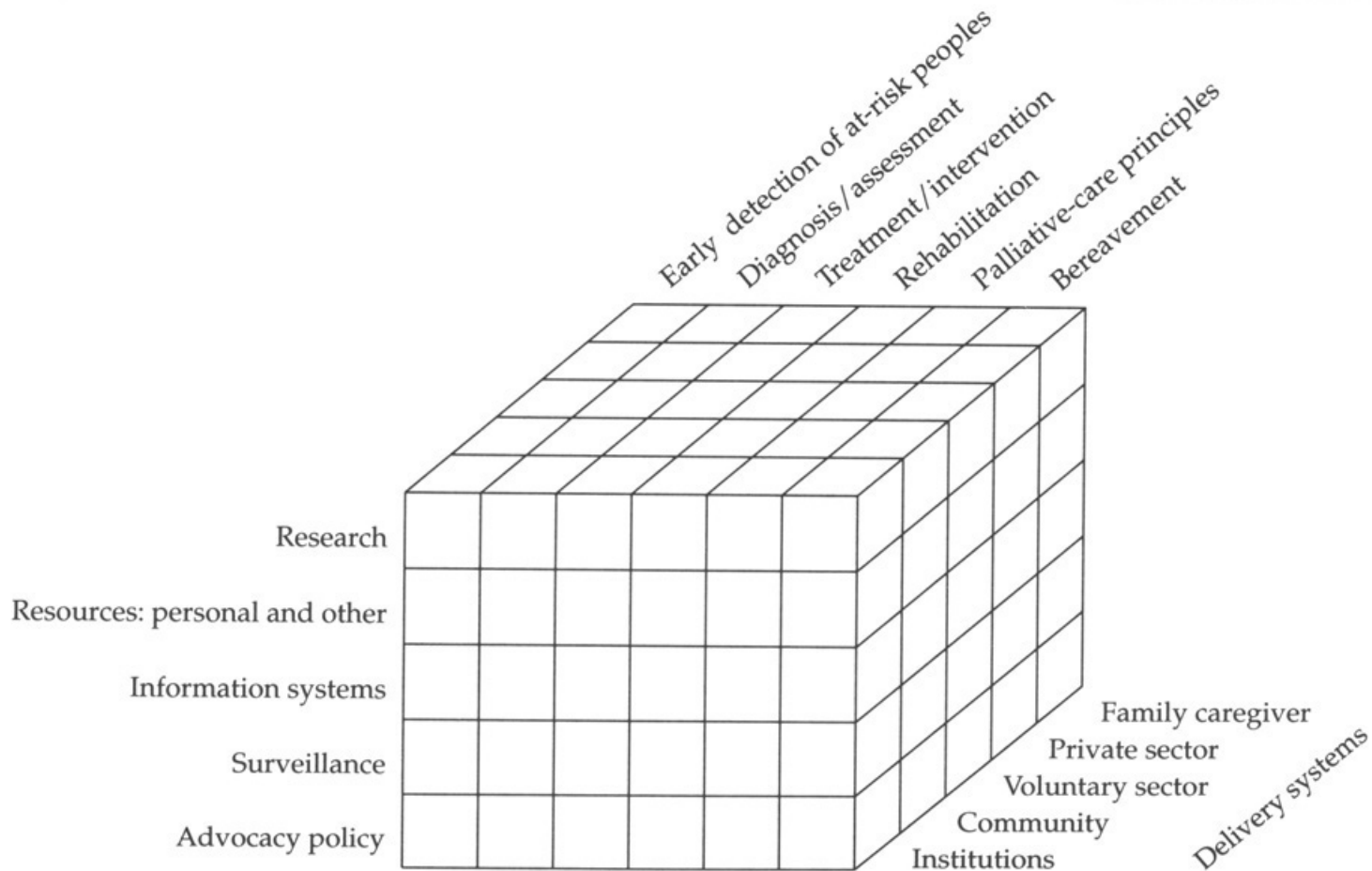
"All Canadians with disease and disability receive timely supportive care in the right amounts and of the right duration to enable healthy living with all their challenges."

The realization of this vision requires an awareness of the "profound and universal impact" of disease on the quality of life of individuals, families, and communities and an "invincible alliance" of organizations, constituents, and collaborators (Carlow, 2000, p. 32). The CIHR cannot realize the vision alone, but it can realize it by acting in concert with those many others who share it. The outcome will be a capacity to continuously link research with policy and with delivery of services. Through the CIHR institutes, Canada will be well positioned to provide global leadership in supportive care research and health-related quality-of-life outcomes.

Realization of the vision requires an alliance of advocacy and provider organizations involved in supportive care research, education, and delivery. This alliance would address the goals of a broad framework of supportive care inclusive of age, gender, and cultural sensitivity (see Figure 2), within which research and personnel training awards would be focused on the early detection and diagnosis of persons at risk and on assessment of the interplay of their challenges. Supportive care treatment, intervention, and rehabilitation strategies would be aimed at the level of individual, family, community, and population and would encompass palliative-care principles and bereavement. The framework would extend to all systems in which supportive care might be provided (institutions, voluntary sector, private sector, family).



**Figure 2** *Broad Strategy for Supportive Care*



Supportive care would be integrated across the CIHR themes of biomedical, clinical, and health services and the culture/society population perspectives inherent in each disease-specific institute. This vision is consistent with the visions suggested in the bioethics and health law submission to CIHR.

### **Research and Program Evaluation Needs**

The evaluation of new and established programs, though politically important, is usually not valued as research. There is a need for reflection on whether program evaluation is truly desirable in a social system of health. Workshop participants expressed the opinion that supportive care should be viewed as an essential component of research and that CIHR could take a leadership role by fostering an environment in which each component of the model is considered. As institutes make research decisions, the viewpoint inherent in the model for supportive care should prevail and evaluation should be funded as a critical aspect of research (see Figure 2). The approach to evaluation would ideally be interdisciplinary, multi-jurisdictional, multi-disease, inclusive of multiple illness trajectories, inclusive of multiple methodologies, cross-cultural, and inclusive of the under-served and the hard to reach.

Research and evaluation will include hypothesis-generating, epidemiology, multiple perspectives, and measurement using qualitative and quantitative methodologies. Supportive care will be inclusive of symptom management, health promotion, implications of genetics research, testing of alternative supportive care strategies, and the financing of supportive care structures as applicable to cross-cultural, under-served, and hard-to-reach populations, be they located in institutional or community settings.

### **Recommendations**

#### ***Supportive Care Research as a Distinct Field of Scholarship***

There was overwhelming support for the inclusion of supportive care research *as a component of all institutes* established under the CIHR. The delegates proposed a cross-cutting model that recognizes the distinct contribution of supportive care research to the mission and goals of each institute. While the establishment of a separate institute for supportive care was discussed, decision-making was influenced by a concern that this field of research would become further marginalized and that researchers presently working in this field would become further isolated. The advantages of a separate institute could be incor-

porated into a cross-cutting model through the collaboration of an alliance.

### *Development of a Supportive Care Research Alliance*

The role of the alliance would be to consistently advocate for supportive care research, as depicted in Figure 2. The alliance would set the priorities for the areas of supportive care research that should be strategically targeted across institutes. It would have the means to consider the broader mandate and ensure a cohesive strategy versus isolation and fragmentation.

The alliance would also work towards the dynamic partnering of various work groups. For example, the NCIC, the Canadian Cancer Society, Health Canada, and the Canadian Association of Provincial Cancer Agencies are working towards a coordinated approach to cancer control (Luciani & Berman, 2000; Foster & Boscaino, 2000). Within this structure, an Integration Group examines topic and themes including research, supportive care, and palliative care. Once a strategic framework is agreed upon, the establishment and implementation of a research agenda is logically linked to the appropriate CIHR institutes through the alliance. Less well-developed areas may require additional leadership and support.

### *Permeation of Supportive Care Throughout the CIHR*

To promote research and evaluation in all areas of supportive care and rehabilitation, a comprehensive approach would be taken, spanning the basic cellular to behavioural interventions that enhance quality of life, promote health, prevent illness, and reduce mortality and the impact of disease and treatment at both individual and population levels. This continuum of research is inclusive of genetics research, biomedical aspects of complementary therapy, clinical research, epidemiology, synthesis/dissemination for health service and policy decisions, and social determinants of health relative to supportive care.

### *Supportive Care Position on CIHR Governing Council*

The CIHR Governing Council should emphasize the concept of supportive care/rehabilitation and gear the CIHR's objectives, resource allocation, and budget to the realization of the vision. The Governing Council should provide for the exchange of supportive care knowledge and expertise across the institutes. In keeping with these goals, a promi-

nent researcher in supportive care should sit on the Governing Council. At the institute level as well, the structures developed to govern the work of each institute or advisory body should include an established researcher in supportive care.

### *Supportive Care Peer-Review Panel*

While supportive care research is not new, it is only now emerging as a scientifically relevant field of research in Canada, and the CIHR presents a unique opportunity for it to grow and develop. The peer-review process is critical to the recognition and acceptance of this body of science. In the absence of a national critical mass of researchers in supportive care, the academic and scientific integrity of the research is of the highest priority. A cross-institute panel could be established to review any application related to supportive care. In view of the cross-cutting themes of the model, a representative of the supportive care research community would be invited to sit on such a panel. Lay representatives knowledgeable in the area of interest would contribute to the review, particularly concerning the relevance and application of the proposed research, but would not be involved in the scientific ranking of the applications.

### *Capacity Building*

Canada does not have an abundance of behavioural scientists working in any one field ready to provide strong leadership within the CIHR institutes. Cancer may be the area best prepared to offer a national perspective through the theme-based sociobehavioural research networks. However, those presently working in the field are scattered across the country, in both academic and clinical settings, and are bound by the disease-oriented model of the dominant disease-based research funding systems. These barriers have contributed to the absence of an established critical mass of researchers with a common interest in sociobehavioural research from the perspective of chronicity and health challenges. A major gap identified by the Cancer Control Strategy Working Group (2000) is that between the best practice approach of clinical practice standards and behavioural research. The result is a huge deficit between possible supportive care interventions to enhance the effective and efficient use of the guidelines and the exploration of a full range of associated biopsychosocial outcomes.

Canada lags behind other developed countries in its commitment of funding and structure for research that is inclusive of supportive

care. If current trends continue, we will fall further behind. Canada has a history of missed opportunities in sociobehavioural, palliative, and end-of-life research. Based on the principles of the CIHR, "the timing is right" to rectify past mistakes and move forward in our understanding of the determinants of health and health-risk behaviours (2000).

The following initiatives warrant immediate attention: provision of graduate, doctoral, and post-doctoral fellowships in supportive care; provision of infrastructure grants; funding for a network of (non-disease-specific) supportive care researchers; provision of investigator-driven grants; provision of targeted research programs (those in cross-cutting areas warrant special attention as they may not fall within the priorities of any one institute).

### *Synthesis and Dissemination Research and Evaluation*

Funding should be made available for the synthesis of information on publicly, privately, and voluntarily funded models of supportive care and best practices in supportive care for people with acute or chronic physical/mental health problems or in challenging circumstances (poverty, immigrant status, etc.). In addition, funding should be made available to test ways of disseminating this synthesized information to decision-makers and thus fostering its use in policy and practice. Priority areas are: conferences and colloquia, synthesis of policy papers, and evaluation of different approaches to the dissemination of information and its application in policy and in practice.

### **Implications for Nursing**

In the absence of a national strategy for supportive care research, policy, and practice, people with chronic illness use a disproportionate quantity of crisis and expensive health-care resources that are not related to the type or severity of their disease or their treatment status (Browne et al., 1999). Consistent with the proposed vision, a national supportive care strategy would enable Canadians with disease and disability to live with all their challenges. A national nursing association would be well positioned to take a leadership role in formulating a national multidisciplinary, multi-sectoral strategy that engages researchers, clinicians, advocacy groups, and people facing major health challenges. The outcome would be to collectively advocate for a national secretariat that will move beyond the development of a strategic plan, to facilitate communications and implementation by decision-makers in the delivery of services at the provincial level. Future work-

shops should include strong representation from the service agencies and government decision-makers in addition to researchers.

This workshop provided an opportunity to begin addressing supportive care research. The participants acknowledged the need to move from a disease-specific model to embrace a chronic illness perspective. This represents a significant transformation in the conceptualization of supportive care. The CIHR has been challenged to be vigilant of the need for supportive care research across all institutes and to stress the relevance of research-policy-practice linkages. This is an opportunity for nursing to play a leadership role in the creation of a national strategy in an area of care that clearly represents the work of nurses in this country.

### References

- Arpin, K., Fitch, M., Browne, G., & Corey, P. (1990). Prevalence and correlates of family dysfunction and poor adjustment to chronic illness in specialty clinics. *Journal of Clinical Epidemiology*, 43(4), 373-383.
- Browne, G., Roberts, J., Gafni, A., Byrne, C., Weir, R., Majumdar, B., & Watt, S. (1999). Economic evaluations of community-based care: Lessons from twelve studies in Ontario. *Journal of Evaluation in Clinical Practice*, 5(3), 1-19.
- Browne, G., Roberts, J., Weir, R., Gafni, A., Watt, S., & Byrne, C. (1994). The cost of poor adjustment to chronic illness: Lessons from three studies. *Health and Social Care*, 2, 85-93.
- Browne, G., Watt, S., Roberts, J., Gafni, A., & Byrne, C. (1997a). Within our reach: Evidence-based practice resulting from alliance in health and social services. *Clinical Excellence for Nurse Practitioners*, 1(2), 127-140.
- Browne, G., Watt, S., Roberts, J., Gafni, A., & Byrne, C. (1997b). Partners in affiliated health and social service agencies. *Clinical Excellence for Nurse Practitioners*, 1(2), 127-140.
- Canadian Cancer Society/National Cancer Institute of Canada. (1999). *Canadian cancer statistics*. Toronto: Author.
- Canadian Cancer Society/National Cancer Institute of Canada. (2001). *Canadian cancer statistics*. Toronto: Author.
- Cancer Control Strategy Working Group. (2000). *Canadian cancer control strategy report (draft)*. Toronto: Canadian Cancer Society/National Cancer Institute of Canada.
- Carlow, D. (2000). Status report: Canadian Association of Provincial Cancer Agencies. *Chronic Diseases in Canada*, 21(1), 30-33.
- Foster, B., & Boscaino, A.M. (2000). Status report: Canadian Association of Provincial Cancer Agencies. *Chronic Diseases in Canada*, 21(1), 26-29.
- Health Canada. (2000). The Canadian Institutes of Health Research. [Online] Available: [www.cihr.ca](http://www.cihr.ca)



- Johnston, G., Murnaghan, D., Buehler, S., & Nugent, L. (1998). Atlantic Breast Cancer Information Project: Formation of a "town-grown" partnership. *Cancer Prevention and Control*, 2(1), 23-29.
- Johnston, G.M., & Short, S. (1999). Patient some more: Breast cancer initiatives in Canada and Australia, 1990-96. *Australian-Canadian Studies*, 17(1), 21-40.
- Luciani, S., & Berman, N. (2000). Status report: Canadian Association of Provincial Cancer Agencies. *Chronic Diseases in Canada*, 21(1), 23-25.
- Moore, R., Mao, Y., Zhang, J., & Clarke, K. (1997). *Economic burden of illness in Canada, 1993*. Ottawa: Minister of Health.
- Roberts, J., Browne, G., Streiner, D., Gafni, A., Pallister, E., Hoxby, H., Jamieson, E., & Meichenbaum, D. (1995). The effectiveness and efficiency of health promotion in specialty clinic care. *Medical Care*, 33(9), 892-905.
- Till, J. (1996). An introduction to the Framework Project. *Cancer Prevention and Control*, 1(3), 192-195.

### **Authors' Note**

The workshop discussed in this paper was funded by a grant from the Social Sciences and Humanities Research Council of Canada.

The authors wish to acknowledge the time and expertise provided by the delegates to the workshop and to thank Marilyn Landry for assisting with manuscript preparation.

Correspondence may be directed to: Lorna Butler, Room 122, Forrest Building, School of Nursing, Dalhousie University, Halifax NS B3H 3J5 Canada. Telephone: 902-494-3499. E-mail: <lorna.butler@dal.ca>.



# **Recruitment of Community-Dwelling Older Adults for Nursing Research: A Challenging Process**

**Pamela Hawranik and Verna Pangman**

Compte tenu de l'évolution des données démographiques, la recherche dans le domaine des soins infirmiers gériatriques est devenue un élément essentiel dans l'élaboration, en matière de santé et de services sociaux, de politiques et de ressources pertinentes pour les personnes âgées. Le recrutement de personnes âgées résidant dans la communauté présente de multiples obstacles pour l'infirmière chercheuse qui désire mener des recherches concluantes. Cette préoccupation est relevée fréquemment dans la documentation, notamment en ce qui a trait au nombre de participants. Le recrutement des personnes âgées de 65 ans et plus dépend de facteurs tels que le sexe et le plan de recherche, ainsi que des changements d'ordre physique, social ou psychologique liés à l'âge. Le présent article décrit ces facteurs, propose des stratégies de recrutement efficaces, présente un modèle de recrutement en trois étapes et résume les points essentiels dont doit tenir compte l'infirmière chercheuse en la matière.

In the face of changing demographics, the need for gerontological nursing research has become central to the development of relevant health and social policies and resources for older adults. The recruitment of community-dwelling older adults presents multiple challenges for the nurse researcher wishing to conduct meaningful research. A common concern cited in the literature is the recruitment of sufficient numbers of older participants. The recruitment of persons 65 years of age and older is influenced by factors such as gender and study design as well as physical, social, psychological, and age-related changes. This paper describes these factors, as well as effective strategies for recruiting older adults, the authors' conceptualization of a 3-phase recruitment process, and key points for the nurse researcher to consider when recruiting subjects.

The proportion of older adults is increasing due to the current demographic shift in society (Chappell & Reid, 2000). Scientifically sound gerontological nursing research is important for the development of not only relevant health and social policies but also evidence-based practice. A critical factor in this research is the recruitment of sufficient numbers of participants.

A review of the literature reveals that the recruitment of older adults presents a unique challenge (Cartmel & Moon, 1992; Herzog,

---

*Pamela Hawranik, RN, MN, PhD, is Associate Professor, Faculty of Nursing, and Research Affiliate, Centre on Aging, University of Manitoba, Winnipeg, Canada. Verna Pangman, RN, MN, MEd, is Lecturer, Faculty of Nursing, University of Manitoba.*

Rodgers, & Kulka, 1983; Martin, 1995). In addition, few researchers have examined community-based recruitment efforts involving older adults. One study has found that for every nine to 12 older adults contacted, one will meet the eligibility criteria and enrol in the study (Williams, Vitiello, Ries, Bokan, & Prinz, 1988).

The purpose of this paper is to discuss factors affecting the recruitment of community-dwelling older adults, the integration of various recruitment strategies into a three-phase recruitment process, and recommendations for successful recruitment.

### **Factors Affecting Recruitment**

Physical, social, and psychological changes pose important recruitment challenges for the researcher. However, other factors such as age, gender, and study design should also be considered.

#### ***Physical Factors***

The health of older adults can affect both their participation in research and the findings of that research (Laird & Conn, 1996; Preski & Burnside, 1992). According to Norton and colleagues (1994), a sample of older adults drawn from a community setting will most likely include a large proportion of individuals with chronic illness. Findings from the General Social Survey (Desjardins, 1993) indicate that 80% of Canadians aged 65 and over report one or more chronic conditions such as joint problems, heart disease, respiratory problems, diabetes, or hypertension. Sensory deficits such as visual or hearing impairment may affect the person's ability to complete questionnaires and follow complex instructions (Eliopoulos, 2001). Chronic illness and impaired sensory function can affect not only the everyday activities of older adults but also their ability to participate in research.

#### ***Social Factors***

When recruiting, the researcher should consider older adults' informal and formal support systems. These can play an important role in determining whether or not the person participates in the study.

The informal support system may include family members or networks of friends. The spouse and adult children of elderly individuals have been found to adopt a guarded attitude towards any procedure that involves their family member. Many adult children advise their elderly parents not to sign forms without consulting them (Laird &

Conn, 1996; Williams, 1992). Such protective behaviour can either facilitate or hinder the participation of older adults in research. The informal support system may also include individuals or groups whose approval must be sought in order to gain access to the older adult, such as the manager of a seniors' housing complex or the board of directors or administrator of a seniors' centre.

The formal system consists of health professionals such as nurses and physicians. The endorsement and support of health professionals can be key in establishing a study's credibility among potential participants (Diekmann & Smith, 1989). If the sample is to be drawn from a nurse's caseload, factors such as the nurse's workload and degree of interest may influence the likelihood that she or he will promote the study among clients. Clients' trust in the opinion of their health professional can be vital in influencing their decision to participate. In addition, older adults tend more than young people to value the knowledge and authority of health professionals and to use their services more frequently. Penman and colleagues (1984) report that 80% of their elderly subjects said they relied on their physician for advice on whether to participate.

Society is rife with stereotypical assumptions about aging and the lifestyle of older adults. One such assumption is that retired persons have abundant leisure time and are not interested in the world around them. In fact, they may be involved in so many activities that they do not have time to be interviewed by a researcher (Laird & Conn, 1996; Preski & Burnside, 1992). Furthermore, older adults may consider participation in research part of "living a full life" (Souder, 1992, p. 315).

### *Psychological Factors*

Psychological and cognitive changes can be influenced by general health status, genetic factors, and lifestyle (Eliopoulos, 2001). Changes in cognitive function do occur with age; however, the form that these changes take, and whether they represent an actual decline in cognitive ability, is the subject of debate (Miller, 1999). Nevertheless, it is essential that the older adult be provided a thorough, clear, and concise description of the study (Boles, Getchell, Feldman, McBride, & Hart, 2000; McNeely & Clements, 1994) as well as ample time to process information and formulate questions. The researcher should evaluate the older adult's understanding of one topic before progressing to another, and should provide written as well as oral information (Eliopoulos).

Laird and Conn (1996) report that an older adult's participation may be related to an interest in scientific research, concern about their own health, or desire to help others. Kaye, Lawton, and Kaye (1990) report that participation rates increase when individuals perceive a personal benefit from their participation. Motivation can be a decisive factor for the older adult. Souder (1992) identifies eight motivators derived from 4 years of aging research with the middle-aged and elderly: opportunity to help others and contribute something meaningful to society (altruism); opportunity for interaction; opportunity to acquire information about their own health; opportunity for a novel experience; an expectation that the study will result in a treatment or cure for their own condition; previous experience with research or interest in the study; a second opinion on a diagnosis or treatment due to dissatisfaction with past medical care; and reassurance concerning their own health.

### *Age Factors*

Non-participation in research has been shown to have a linear relationship with age. Older adults show lower response rates and higher likelihood of refusing to participate than younger people (Dodge, Clark, Janz, Liang, & Schork, 1993; Herzog et al., 1983). Streib (1983) estimates that only half of all potential respondents will decide to participate, even after the researcher has established rapport with them. The "old-old" group of individuals, those 75 and over, are often frail, are considered more difficult to locate and to interview, and may be reluctant to spend what little energy they have on a research project. They therefore have the lowest response rate of all older adults (Laird & Conn, 1996; McNeely & Clements, 1994; Rodgers & Herzog, 1992).

Much of the gerontological research has tended to aggregate all adults over the age of 60 into one group spanning 40 years. Researchers and clinicians acknowledge that this broad age span comprises a number of heterogeneous subgroups. Life events, social and political experiences, and economic conditions have been different for each of these subgroups, resulting in different perceptions and levels of understanding of research (Bowsher, Bramlett, Burnside, & Gueldner, 1993; Laird & Conn, 1996).

### *Gender Factors*

The literature is inconsistent on which gender tends to be more willing to participate in research. A few studies have found that men are more



likely than women to be non-participants (Groves, Miller, & Cannell, 1987). Others report that men are more likely than women to participate (Ganguli, Mendelsohn, Lytle, & Dodge, 1998; Preski & Burnside, 1992; Rosenberg et al., 1996). Because of the larger proportion of women in the older age group, it is important that women's health concerns be addressed and that women be represented appropriately in the sample. Such measures may help to narrow the gender gap in research. The nurse researcher is advised to carefully consider whether the gender representation is commensurate with the aims of the study.

### *Study Design as a Factor*

The researcher should be aware that the sampling frame from the population of interest can influence the representativeness of the sample. For example, participants drawn from medical records may represent only those who have been ill; participants drawn from an agency's program or clinic lists will include only those who have used the services of the agency, whose characteristics may differ from those of non-users (Hawranik, 1998); and participants recruited from a seniors' housing complex will include those older adults who are limited in activities of daily living and exclude those who reside in the community and are independent in terms of such functions as meal preparation and yard maintenance.

Older adults are a heterogeneous population with different experiences and life situations. Some of their characteristics could affect the outcome variable in several ways. Relationships among variables must be considered because of the potential for confounding effects, which could influence the results. For example, the physical health of the older adult could affect the outcome or dependent variable and lead to erroneous conclusions. When the use of health-care services by older adults is being examined, the results might indicate that functional limitations are the critical factor in the use of the services when in fact it may be cognitive impairment that is the influential factor. Another example of a confounding relationship is that of age being considered the major factor restricting socialization when in fact it may be health condition (arthritis, for instance) that is the major factor (Christensen, Armson, Moye, & Kern, 1992; Laird & Conn, 1996; Pangman, 1996).

The type of study being conducted, whether longitudinal, cross-sectional, or a clinical trial, will influence the recruitment of older individuals. Longitudinal studies require a fairly stable sample over time. An older person's reluctance to participate may be related to the long duration of the study (several months or years) and thus the time com-

mitment. The researcher should be aware that respondents' health will gradually change and that the rate of attrition will be higher for this age group than for others. For older adults in particular, the calculation of a representative sample must take into account the high rate of attrition.

For a cross-sectional study, in contrast, a smaller sample may be sufficient because of the one-time contact. The older adult may be more willing to participate in cross-sectional studies because these do not require a long-term commitment.

For randomized clinical trials, older persons have been identified as more difficult to recruit than younger persons (Vogt, Ireland, Black, Camel, & Hughes, 1986). The recruitment and enrolment phase of a clinical trial requires detailed descriptions of the study, assessment of eligibility, and determination of baseline values. A clinical trial may be more likely to attract older participants if it involves a treatment they stand to benefit from personally (Souder, 1992).

Rosenberg and colleagues (1996) examined the factors that influence willingness to participate in clinical gerontologic research. Respondents were presented with seven research protocols and asked to assign a level of intrusiveness to each. Low intrusiveness was described as one clinic visit of less than 3 hours for a physical examination (no internal examination) and blood and urine testing. High intrusiveness was described as more than 14 clinic visits for multiple blood tests and other invasive procedures causing great physical discomfort. An inverse relationship was found between perceived level of intrusiveness and willingness to participate — that is, a protocol rated as having a low level of intrusiveness was predictive of a greater willingness to participate.

In summary, the researcher should take into account the recruitment implications of the study design.

### **Recruitment Strategies**

Researchers frequently underestimate the amount of time needed for recruitment. Investigators must allow sufficient time for the recruitment process and target their recruitment strategies to the type of sample desired, taking into consideration the unique needs of older adults. The literature indicates that investigators do not always use the most appropriate strategies for recruiting older adults (Gitlin, Burgh, Dodson, & Freda, 1995; Leader & Neuwirth, 1978). The recruitment process may require more than one approach. Although the strategies employed in recruiting older adults may be similar to those used in recruiting other

subjects, the researcher should constantly keep the special needs of older people in mind.

We conceptualize recruitment for a research study as a three-phase process: pre-recruitment, recruitment, and follow-up.

### *Pre-Recruitment Phase*

Careful attention to recruitment details at the “front end” of the study can be instrumental in ensuring adequate sample size and representation (Crosby et al., 1991). A number of studies have found the need for an initial phase, prior to recruitment, involving community support and access to the subject pool (Boult, Boult, Morishita, & Pirie, 1998; McNeely & Clements, 1994; Preski & Burnside, 1992). Strategies to build rapport and therapeutic interpersonal skills must be employed early and consistently throughout the study.

Diekmann and Smith (1989) outline four approaches that can be taken prior to the recruitment phase. The first is to enlist the support of health professionals. If health professionals are to play a vital role in recruitment, they must be informed about the study. Exchanging ideas with health professionals concerning the research topic and potential participants will benefit the study. It is also a necessary courtesy to health professionals in that it acknowledges their ability to provide assistance. Boult and colleagues (1998) collaborated with physicians in the pilot phase of their study, not only to ask their permission for access to their patients but also to assure them that their patients would not be redirected to another physician. The authors attribute their high consent rate of 92.4% to their early liaison with physicians.

The second approach is to obtain letters of support from the board of directors of the agency and from religious, social, and educational support groups in the communities from which the participants will be drawn. These groups might also provide assistance in identifying further sources of recruitment. It is important that the researcher take the time to meet with each group individually and prepare a summary of the project (written in layman’s terms) for its newsletter or make a presentation in order to discuss the study with them (MacDougall & Fudge, 2000).

The third approach is to publicize the study. Strategies include writing brief news items for publication in newsletters or newspapers read by older adults and placing posters in locations frequented by seniors. In addition, contacting television or radio stations may result in the researcher being interviewed about the study. The relevance of

the project and its benefits for participants as well as older adults in general should be clearly articulated.

The fourth approach is to consider the use of incentives. These may include payment for participation, payment to cover the cost of transportation to or parking at the interview site, free consultation or treatment, or provision of lunch. Rosenberg and colleagues (1996) found that a stipend served to increase willingness to participate as the level of intrusiveness increased. Boulton and colleagues (1998) found that the largest increase in response rate occurred after a one-dollar bill was included in the follow-up mailing, after the initial questionnaire had been sent. Stipends are not commonly used in nursing research.

Finally, a necessary step in the pre-recruitment phase is obtaining the approval of the agency. Every agency has a policy or standard practice regarding access to its client or administrative data for research purposes. The investigator will have to complete an application form and, most likely, provide a copy of the study proposal and state the agency resources that will be required — staff resources to inform clients about the project as well as physical resources. The researcher must also obtain ethical approval. An information session could be scheduled with the access officer or the chair of the access committee to answer questions or discuss agency concerns. Such a meeting can help expedite the application process.

The time frame for the study must take into account the time needed to promote the project and have it approved.

### *Recruitment Phase*

The recruitment phase can involve a number of strategies, to be determined by the eligibility criteria for the study and the population from which the sample is selected.

**Advertisements.** Press releases and advertisements in mass-circulation newspapers have been found to be the most successful strategy for identifying large numbers of older adults with diabetes (Anderson, Fogler, & Diedrick, 1995). The ads should be directed to a wide audience and allow potential subjects time to reflect on the study and on their participation (Gueldner & Hamner, 1989; Tell et al., 1993).

Topp and Bawell (1992) compared seven strategies for recruiting older adults from the community for an exercise study. Four strategies involved direct cost, such as ads in suburban and city newspapers and posters and presentations at seniors' centres. Three involved no direct

cost, such as ads in university newsletters, community service ads in city newspapers, and word-of-mouth referrals. Advertising in the Sunday edition of a city newspaper was found to be the most effective strategy of all. A limitation of this strategy is that it will reach only those potential recruits who are literate and subscribe to the newspaper (Laird & Conn, 1996; Topp & Bawell).

Glasgow and Hampson (1995) identify announcements in church and community bulletins and brochures in physicians' offices, drug-stores, or seniors' centres as the most commonly used recruitment strategies. An advantage of these strategies is their low cost and ease of implementation. A disadvantage may be their high response rate, necessitating greater screening resources to determine eligibility.

**Personal contact.** A number of studies have found personal contact with older adults and their gatekeepers to be the most effective strategy when used as either the sole recruitment strategy or one of several (Bowsher et al., 1993; Crosby, Ventura, Finnick, Lohr, & Feldman, 1991; Laird & Conn, 1996; Leader & Neuwirth, 1978; Norton, Breitner, Welsh, & Wyse, 1994). Recruitment can be enhanced when the researcher is introduced to the potential participants by a familiar and trusted figure (Gueldner & Hamner, 1989; Park & Cherry, 1989).

Crosby and colleagues (1991) compared three recruitment strategies: in-person contact at a medical centre, telephone contact, and mail contact. They found in-person contact to be the most effective strategy, yielding a 95% acceptance rate, compared to 50% and 0% respectively for telephone and mail. Personal contact can be particularly important at the time of recruitment, as "the greatest bonding between study staff and participants tends to occur fairly early during the enrollment process" (Applegate & Curb, 1990, p. 945).

**Mail-outs.** Recruitment by mail has met with mixed success. Letters/questionnaires printed on university or government letterhead have been found to elicit higher response rates than those printed on another type of letterhead or with no letterhead (Baumgartner & Heberlein, 1984). Several studies have found that the response rate increases when the initial mailing is followed by a second mailing (Baumgartner & Heberlein; Dillman, 1978). Other studies have found mailed questionnaires to be no more effective than telephone contact followed by a scheduled home visit (Cartmel & Moon, 1992; Smith & McKinlay, 1988). Researchers speculate that the questionnaire may go unnoticed in the masses of junk mail and fliers that people receive. Crosby and colleagues (1991) found mail contact to be less effective than both in-person and telephone contact.



**Telephone contact.** Although it is a personal and interactive approach, telephone recruitment is generally considered less effective than in-person recruitment. This strategy has the advantages of being less expensive than in-person recruitment and allowing for centralized supervision of staff, but it has several disadvantages. First, it excludes people who do not have a telephone. It is also more expensive than mail-out strategies (Taylor-Davis, Smiciklas-Wright, Davis, Jensen, & Mitchell, 1998). It requires additional time in that screening for eligibility must be conducted separately from consent and interview. Older adults appear less willing than younger persons to participate in telephone interviews (Dodge, Clark, Janz, Liang, & Schork, 1993). Further, the older adults who do participate tend to be healthier and better educated than those who are interviewed in-person, and a greater number of "missing" and "don't know" responses have been found to occur in telephone interviews than in in-person interviews (Herzog et al., 1983). Cartmel and Moon (1992) used two methods to contact potential participants, an unscheduled visit to drop off the questionnaire and a telephone call followed by a scheduled visit. They found no difference in response rate.

**Multi-method.** A number of studies have used a multi-method approach to recruitment. There is evidence that a combination of two or more approaches can be effective. Taylor-Davis and colleagues (1998) and Murphy (1993) found a two-step process consisting of an introductory mailed letter and a telephone interview to be effective. Boulton and colleagues (1998) tested the effectiveness of a two-step process consisting of mail-outs with monetary incentives and telephone follow-up. They conclude that it produced, at reasonable cost, a large sample of community-dwelling older adults. Glasgow and Hampson (1995) conducted a comprehensive multimedia recruitment campaign including notices in a number of settings frequented by older adults. They conclude that the use of multiple strategies is a practical and cost-effective means of recruiting older adults for psychological studies on chronic illness.

It should be kept in mind that whatever strategies are chosen, they must show sensitivity towards and respect for the population being recruited.

### ***Follow-up Phase***

At the end of the study, the researcher has an obligation to maintain communication with and disseminate the results to the participants, their proxies and gatekeepers, and health professionals. Such



approaches as letters, thank-you cards, and group presentations can be used to acknowledge the participation and assistance of these people and to inform them of the findings. McNeely and Clements (1994) found that older adults are more likely to participate in future research if they are informed of the current findings. Presentations designed specifically for health-care professionals or the board of directors are an important component of the overall study. Discussion of research findings and issues related to nursing practice and future research can help health-care professionals and community groups to identify strategies they might use in addressing the results.

### **Conclusion**

The factors affecting the recruitment process have led us to propose a three-phase approach. Such an approach may help the researcher to delineate issues encountered at particular points in the recruitment process. In attempting to recall some of the key points in recruitment, the researcher may find it helpful to use the acronym MONITOR:

- Maintain close monitoring and tracking throughout the recruitment period.
- Overestimate the number of available participants in anticipation of high attrition rates.
- Notify the gatekeepers.
- In-person contact is the most effective recruitment strategy.
- Type of respondents needed will determine type of strategy selected.
- Overestimate the time required for advance marketing of the study.
- Rely on multiple approaches.

Recruitment of the older adult participant for research studies presents many challenges for nurse researchers. These challenges can be met through the use of innovative and deliberate approaches to recruitment.

### **References**

- Anderson, L., Fogler, J., & Diedrick, R. (1995). Recruiting from the community: Lessons learned from the Diabetes Care for Older Adults project. *Gerontologist, 35*(3), 395–401.
- Applegate, W., & Curb, D. (1990). Designing and executing randomized clinical trials involving elderly persons. *Journal of the American Geriatrics Society, 38*(8), 943–950.

- Baumgartner, R., & Heberlein, T. (1984). Recent research on mailed questionnaire response rates. In D. Lockhart (Ed.), *Making effective use of mailed questionnaires*. San Francisco: Jossey-Bass.
- Boles, M., Getchell, W., Feldman, G., McBride, R., & Hart, R. (2000). Primary prevention studies and the healthy elderly: Evaluating barriers to recruitment. *Journal of Community Health*, 25(4), 279-292.
- Boult, C., Boult, L., Morishita, L., & Pirie, P. (1998). Soliciting defined populations to recruit samples of high-risk older adults. *Journal of Gerontology*, 53A(5), M379-384.
- Bowsher, J., Bramlett, M., Burnside, I., & Gueldner, S. (1993). Methodological considerations in the study of frail elderly people. *Journal of Advanced Nursing*, 18, 873-879.
- Cartmel, B., & Moon, T. (1992). Study of strategies for the recruitment of elders including the use of community volunteers. *Journal of the American Geriatrics Society*, 40, 173-177.
- Chappell, N., & Reid, R.C. (2000). Dimensions of care for dementia sufferers in long-term care institutions: Are they related to outcomes? *Journal of Gerontology*, 55B(4), S234-244.
- Christensen, K., Armson, R., Moye, J., & Kern, T. (1992). Health screening and random recruitment for cognitive aging research. *Psychology and Aging*, 7(2), 204-208.
- Crosby, F., Ventura, M., Finnicks, M., Lohr, G., & Feldman, M.J. (1991). Enhancing subject recruitment for nursing research. *Clinical Nurse Specialist*, 5(1), 25-30.
- Desjardins, B. (1993). *Population ageing and the elderly: Current demographic analysis*. (Statistics Canada Catalogue #91-533E.) Ottawa: Minister of Industry, Science and Technology.
- Diekmann, J., & Smith, J. (1989). Strategies for assessment and recruitment of subjects for nursing research. *Western Journal of Nursing Research*, 11(4), 418-430.
- Dillman, D. (1978). *Mail and telephone surveys: The total design method*. New York: Wiley.
- Dodge, J., Clark, N., Janz, N., Liang, J., & Schork, M.A. (1993). Nonparticipation of older adults in a heart disease self-management project. *Research on Aging*, 15(2), 220-237.
- Eliopoulos, C. (2001). *Gerontological nursing (5th Ed.)*. Philadelphia: Lippincott.
- Ganguli, M., Mendelsohn, A., Lytle, M., & Dodge, H. (1998). A follow-up comparison of study participants and refusers within a rural elderly population. *Journal of Gerontology*, 53A(6), M465-470.
- Gitlin, L., Burgh, D., Dodson, C., & Freda, M. (1995). Strategies to recruit older adults for participation in rehabilitation research. *Topics in Geriatric Rehabilitation*, 11(1), 10-19.

- Glasgow, R., & Hampson, S. (1995). Recruiting older subjects for psychological studies of chronic disease: Are community volunteer and clinic-based samples equivalent? *Psychology and Health, 10*, 245–254.
- Groves, R., Miller, P., & Cannell, C. (1987). Differences between the telephone and personal interview data. In *Vital and health statistics* (National Center for Health Statistics Technical Series 2, #106; DHS publication #PHS 87-1380). Hyattsville, MD: US Department of Health and Human Services.
- Gueldner, S., & Hamner, M. (1989). Methodological issues related to gerontological nursing research. *Nursing Research, 38*(3), 183–185.
- Hawranik, P. (1998). *Evaluation of the St. James-Assiniboia Seniors Wellness Centre. Final Report*. Winnipeg: Faculty of Nursing, University of Manitoba.
- Herzog, A.R., Rodgers, W., & Kulka, R. (1983). Interviewing older adults: A comparison of telephone and face-to-face modalities. *Public Opinion Quarterly, 47*, 405–418.
- Kaye, J., Lawton, P., & Kaye, D. (1990). Attitudes of elderly people about clinical research on aging. *Gerontologist, 30*, 100–106.
- Laird, M., & Conn, V. (1996). Nursing challenge: Conducting research with older adults. *Journal of Nursing Science, 1*(5/6), 174–182.
- Leader, M., & Neuwirth, E. (1978). Clinical research and the noninstitutional elderly: A model for subject recruitment. *Journal of the American Geriatrics Society, 26*(1), 27–31.
- MacDougall, C., & Fudge, E. (2001). Planning and recruiting the sample for focus groups and in-depth interviews. *Qualitative Health Research, 11*(1), 117–126.
- Martin, P. (1995). Recruitment of research subjects. *Applied Nursing Research, 8*(1), 50–54.
- McNeely, E., & Clements, S. (1994). Recruitment and retention of the older adult into research studies. *Journal of Neuroscience Nursing, 26*(1), 57–61.
- Miller, C. (1999). *Nursing care of older adults* (3rd Ed.). Philadelphia: Lippincott.
- Murphy, C. (1993). Increasing the response rates of reluctant professionals to mail surveys. *Applied Nursing Research, 6*, 137–141.
- Norton, M., Breitner, J., Welsh, K., & Wyse, B. (1994). Characteristics of nonresponders in a community survey of the elderly. *Journal of the American Geriatrics Society, 42*, 1252–1256.
- Pangman, V. (1996). *Comparison of the reliability of two mental status questionnaires for use in screening cognitive impairment in elderly clients in chronic care units: Implications for nursing practice*. Unpublished master's thesis, University of Manitoba.
- Park, D., & Cherry, K. (1989). Human subjects and cognitive aging research: A unique solution to a perennial problem. *Educational Gerontology, 15*, 563–571.
- Penman, D., Holland, J., Bahna, G., Morow, G., Schmale, A., Derogatis, L., Carnike, C., & Cherry, R. (1984). Informed consent for investigational

- chemotherapy: Patient and physician perspectives. *Journal of Clinical Oncology*, 2(7), 849–855.
- Preski, S., & Burnside, I. (1992). Clinical research with community-based older women. *Journal of Gerontological Nursing*, 18(6), 13–18.
- Rodgers, W., & Herzog, A. (1992). Collecting data about the oldest old: Problems and procedures. In R. Suzman, D. Willis, & K. Manton (Eds.), *The oldest old*. New York: Oxford University Press.
- Rosenberg, R., Gagnon, M., Murphy-Gismondi, P., Lock Ooi, W., Kiel, D., & Lipsitz, L. (1996). Factors influencing subject willingness to participate in clinical gerontologic research. *Aging and Clinical Experimental Research*, 8(6), 400–408.
- Smith, K., & McKinlay, J. (1988). Approaches for contacting respondents in an epidemiologic survey: Results of an experiment (abstract). *American Journal of Epidemiology*, 128, 921.
- Souder, J.E. (1992). The consumer approach to recruitment of elder subjects. *Nursing Research*, 41(5), 314–316.
- Streib, G. (1983). The frail elderly: Research dilemmas and research opportunities. *Gerontologist*, 23(1), 40–44.
- Taylor-Davis, S., Smiciklas-Wright, H., Davis, A., Jensen, G., & Mitchell, D. (1998). Time and cost for recruiting older adults. *Journal of the American Geriatrics Society*, 46, 753–757.
- Tell, G., Fried, L., Hermanson, B., Manolio, T., Newman, A., & Borhani, N. (1993). Recruitment of adults 65 years and older as participants in a cardiovascular health study. *Annals of Epidemiology*, 3, 358–366.
- Topp, R., & Bawell, K. (1992). A comparison of seven methods of recruiting older adults into an exercise study. *American Journal of Health Promotion*, 6(5), 327–329.
- Vogt, T., Ireland, C., Black, D., Camel, G., & Hughes, G. (1986). Recruitment of elderly volunteers for multi-center clinical trial: The SHEP Pilot Study. *Controlled Clinical Trials*, 7, 118.
- Williams, D., Vitiello, M., Ries, R., Bokan, J., & Prinz, P. (1988). Successful recruitment of elderly community-dwelling subjects for Alzheimer's disease research. *Journal of Gerontology*, 43(3), 69–74.
- Williams, S. (1992). Research considerations: Family opinions about elderly relatives in research. *Journal of Gerontological Nursing*, 18(12), 3–8.

## **CJNR's First "Reviewer of the Year": Dr. Judith Wuest for the Year 2000**

**Anita J. Gagnon**

As *CJNR* readers well know, the Journal relies heavily on reviewers to maintain excellence in what is printed within its pages. In the June 2000 issue, I described the publication process, including the various forms of reviewer support implemented since the beginning of my tenure as Associate Editor (Gagnon, 2000). Included was a description of the process of carrying out a performance evaluation of each reviewer and sharing all evaluations with the reviewers on an annual basis. This global "review of reviewers" also provides the editorial board with a structured opportunity to see the strength of our pool of reviewers in supporting the Journal's mission.

Given the number of excellent reviews identified, we have decided to highlight one excellent reviewer per year as a way of honouring the work of all. The first recipient of this honour is Dr. Judith Wuest, for her outstanding contributions as a reviewer during the year 2000.

Dr. Wuest has shown great consistency in the excellence of her reviews. She reviews each manuscript in its entirety, giving appropriate attention to every one of its aspects, ensuring that each valid and clearly worded portion of the manuscript adds up to a coherent whole. She clearly offers suggestions regarding content, organization, style, and, when they are needed, references. She is constructive in her approach to the author, using a tone that suggests her aim is to mentor her colleagues rather than criticize them. Finally, her comments to the editors are consistently accurate and pertinent.

Dr. Wuest is a professor in the Faculty of Nursing at the University of New Brunswick (UNB) and, as of January 2002, a Canadian Institutes of Health Research Investigator co-sponsored with the UNB under the Regional Partnerships Program. She received her undergraduate degree in nursing from the University of Toronto in 1967, her master's in nursing from Dalhousie University in 1989, and her PhD from Wayne

---

*Anita J. Gagnon, RN, PhD, is Associate Editor, Canadian Journal of Nursing Research, Assistant Professor, School of Nursing, McGill University, and Nurse Scientist, McGill University Health Centre, Montreal, Quebec.*

State University in 1995. Her research interests are in the field of women's health, particularly women's caring and care-giving and intimate-partner violence, and she has a passion for qualitative research methods, especially grounded theory. She has published more than three dozen peer-reviewed articles and chapters in books related to research findings and research methods, has received grants from various sources, and has sat on numerous committees key to the health of Canadians. Dr. Wuest is not new to receiving distinctions. She received a Merit Award from the Nurses Association of New Brunswick in 1998, a Leadership Award in Women's Health from the Maritime Centre of Excellence in Women's Health in 2000, and the Canadian Association of Nursing Research Award for Excellence in 2001.

We offer our heartfelt congratulations to Dr. Wuest for a job well done. Her work with the Journal has helped authors to improve their manuscripts and clarify their thoughts, editors to publish quality work, and readers to advance their knowledge in the discipline.

### Reference

- Gagnon, A.J. (2000). Editorial: The journey to publication and support for the peer-review process. *Canadian Journal of Nursing Research*, 32(1), 3-6.



---

**AUTHORS/AUTEURES**

- Allen, M.N.** See Mill, J.E. 33(2), 109
- Anderson, B.** See McIntyre, M. 33(3), 47
- Anderson, J.M.** Discourse: The Politics of Home Care:  
Where Is "Home"? 33(2), 5
- Angus, J.** The Material and Social Predicaments of Home:  
Women's Experiences After Aortocoronary Bypass Surgery 33(2), 27
- Arthur, H.M., Wright, D.M., & Smith, K.M.** Women and Heart Disease:  
The Treatment May End But the Suffering Continues 33(3), 17
- Baker, C., Varma, M., & Tanaka, C.** Sticks and Stones:  
Racism as Experienced by Adolescents in New Brunswick 33(3), 87
- Banfield, V.** See Butler, L. 33(4), 155
- Barrath, D.** See Tomblin Murphy, G. 33(4), 123
- Belknap, R.A.** Sense of Self: Voices of Separation and Connection  
in Women Who Have Experienced Abuse 33(4), 139
- Biehler, L.** See Ploeg, J. 33(2), 43
- Birch, S.** Designer's Corner: Health Human Resource Planning  
for the New Millennium: Inputs in the Production of Health,  
Illness, and Recovery in Populations 33(4), 109
- Blythe, J.** See Ploeg, J. 33(2), 43
- Bontinen, K.** See Perry J. 33(1), 81
- Browne, G.** See Butler, L. 33(4), 155
- Browne, G., Roberts, J., Byrne, C., Gafni, A., Weir, R., & Majumdar, B.**  
Translating Research: The Costs and Effects of Addressing the  
Needs of Vulnerable Populations: Results of 10 Years of Research 33(1), 65
- Burke, R.J.** See Greenglass, E.R. 33(2), 93
- Butler, L., Love, B., Reimer, M., Browne, G., Downe-Wamboldt, B.,  
West, R., & Banfield, V.** Nurses Begin a National Plan  
for the Integration of Supportive Care in Health Research,  
Practice, and Policy 33(4), 155
- Byrne, C.** See Browne, G. 33(1), 65
- Cleveland, G.** Book Review: *Cost-Effectiveness Analysis:  
Methods and Applications* 33(1), 117
- Côté, B.** See Loiselle, C.G. 33(3), 31
- Coyte, P.** See Guerriere, D. 33(1), 77
- Coyte, P.C., & McKeever, P.** Home Care in Canada: Passing the Buck
- Downe-Wamboldt, B.** See Butler, L. 33(4), 155
- Dyck, I.** Designer's Corner: Centring the Home in Research 33(2), 83
- Eastlick Kushner, K.** See Stewart, M. 33(3), 5
- Gafni, A.** Designer's Corner: Willingness-To-Pay (WTP):  
The New-Old Kid on the Economic Evaluation Block 33(1), 59

<b>Gafni, A.</b> See Browne, G.	33(1), 65
<b>Gafni, A.</b> See Roberts, J.	33(1), 19
<b>Gagnon, A.J.</b> <i>CJNR's</i> First "Reviewer of the Year"	33(4), 185
<b>Gagnon, A.J.</b> Guest Editorial: Women's Health	33(3), 3
<b>Gendron, R.</b> See Loiselle, C.G.	33(3), 31
<b>Giovannetti, P.</b> See Tourangeau, A.E.	33(4), 71
<b>Gottlieb, L.N.</b> Editorial: A Matter of Choices	33(1), 3
<b>Greenglass, E.R., &amp; Burke, R.J.</b> Stress and the Effects of Hospital Restructuring in Nurses	33(2), 93
<b>Guerriere, D., McKeever, P., &amp; Coyte, P.</b> Happenings: Focus on Health-Care Settings: The Home Care Evaluation and Research Centre	33(1), 77
<b>Hawranik, P., &amp; Pangman, V.</b> Recruitment of Community-Dwelling Older Adults for Nursing Research: A Challenging Process	33(4), 171
<b>Heaman, M.</b> Designer's Corner: Conducting Health Research with Vulnerable Women: Issues and Strategies	33(3), 81
<b>Hutchison, B.</b> See Ploeg, J.	33(2), 43
<b>Ip, H.</b> See Tiwari, A.	33(3), 63
<b>Kerr, M.S.</b> See Shamian, J.	33(4), 35
<b>Ketefian, S.</b> See Manojlovich, M.	33(4), 15
<b>Kikuchi, J.F.</b> Commentary: Countering the Deterioration and Medicalization of Nursing	33(1), 7
<b>Krueger, P.</b> See Roberts, J.	33(1), 19
<b>Lapointe, M.</b> See Loiselle, C.G.	33(3), 31
<b>Loiselle, C.G., Semenic, S.E., Côté, B., Lapointe, M., &amp; Gendron R.</b> Impressions of Breastfeeding Information and Support Among First-Time Mothers Within a Multiethnic Community	33(3), 31
<b>Love, B.</b> See Butler, L.	33(4), 155
<b>Majumdar, B.</b> See Browne, G.	33(1), 65
<b>Manojlovich, M., &amp; Ketefian, S.</b> The Effects of Organizational Culture on Nursing Professionalism: Implications for Health Resource Planning	33(4), 15
<b>McDonald, C.</b> See McIntyre, M.	33(3), 47
<b>McIntyre, M., Anderson, B., &amp; McDonald, C.</b> The Intersection of Relational and Cultural Narratives: Women's Abortion Experiences	33(3), 47
<b>McKeever, P.</b> Guest Editorial: Home Care in Canada: Housing Matters	33(2), 3
<b>McKeever, P.</b> See Coyte, P.C.	33(2), 11
<b>McKeever, P.</b> See Guerriere, D.	33(1), 77
<b>Mill, J.E., Allen, M.N., &amp; Morrow, R.A.</b> Critical Theory: Critical Methodology to Disciplinary Foundations in Nursing	33(2), 109
<b>Moritz, P.</b> See O'Brien, R.A.	33(2), 87
<b>Morrow, R.A.</b> See Mill, J.E.	33(2), 109
<b>O'Brien, R.A., &amp; Moritz, P.</b> Happenings: Making Evidence-Based Practice a Reality: The National Center for Children, Families and Communities	33(2), 87

- O'Brien-Pallas, L.** Guest Editorial and Discourse: Where to From Here? 33(4), 3
- Pangman, V.** See Hawranik, P. 33(4), 171
- Perry, J., & Bontinen, K.** Evaluation of a Weekend Respite Program for Persons with Alzheimer Disease 33(1), 81
- Ploeg, J., Biehler, L., Willison, K., Hutchison, B., & Blythe, J.** Perceived Support Needs of Family Caregivers and Implications for a Telephone Support Service 33(2), 43
- Pringle, D.M., & White, P.** Happenings: Nursing Matters: The Nursing and Health Outcomes Project of the Ontario Ministry of Health and Long-Term Care 33(4), 115
- Reimer, M.** See Butler, L. 33(4), 155
- Reutter, L.** See Stewart, M.J. 33(1), 97
- Roberts, J., Sword, W., Watt, S., Gafni, A., Krueger, P., Sheehan, D., & Soon-Lee, K.** Costs of Postpartum Care: Examining Associations from the Ontario Mother and Infant Survey 33(1), 19
- Roberts, J.** See Browne, G. 33(1), 65
- Rodney, P., & Varcoe, C.** Towards Ethical Inquiry in the Economic Evaluation of Nursing Practice 33(1), 35
- Semenic, S.E.** See Loiselle, C.G. 33(3), 31
- Shamian, J., Kerr, M.S., Spence Laschinger, H.K., & Thomson, D.** A Hospital-Level Analysis of the Work Environment and Workforce Health Indicators for Registered Nurses in Ontario's Acute-Care Hospitals 33(4), 35
- Sheehan, D.** See Roberts, J. 33(1), 19
- Smith, K.M..** See Arthur, H.M. 33(3), 17
- Sochalski, J.** Discourse: Nursing's Valued Resources: Critical Issues in Economics and Nursing Care 33(1), 11
- Soon-Lee, K.** See Roberts, J. 33(1), 19
- Spence Laschinger, H.K.** See Shamian, J. 33(4), 35
- Spitzer, D.L.** See Stewart, M. 33(3), 5
- Stewart, M., Eastlick Kushner, K., & Spitzer, D.L.** Discourse: Research Priorities in Gender and Health 33(3), 5
- Stewart, M.J., & Reutter, L.** Fostering Partnerships Between Peers and Professionals 33(1), 97
- Sword, W.** See Roberts, J. 33(1), 19
- Tanaka, C.** See Baker, C. 33(3), 87
- Thomson, D.** See Shamian, J. 33(4), 35
- Tiwari, A., Wong, M., & Ip, H.** *Ren and Yuan: A Cultural Interpretation of Chinese Women's Responses to Battering* 33(3), 63
- Tomblin Murphy, G.** Methodological Issues in Health Human Resource Planning: Cataloguing Assumptions and Controlling for Variables in Needs-Based Modelling 33(4), 51
- Tomblin Murphy, G., & Barrath, D.** A Survey of Web-Based Health Human Resource Planning Activities in Canada 33(4), 123

<b>Tourangeau, A.E., Giovannetti, P., Tu, J.V., &amp; Wood, M.</b> Nursing-Related Determinants of 30-Day Mortality for Hospitalized Patients	33(4), 71
<b>Tronto, J.C.</b> Book Review: <i>Care Work: Gender, Labor and the Welfare State</i>	33(2), 129
<b>Tu, J.V.</b> See Tourangeau, A.E.	33(4), 71
<b>Varcoe, C.</b> See Rodney, P.	33(1), 35
<b>Varma, M.</b> See Baker, C.	33(3), 87
<b>Ward-Griffin, C.</b> Negotiating Care of Frail Elders: Relationships Between Community Nurses and Family Caregivers	33(2), 63
<b>Watt, S.</b> See Roberts, J.	33(1), 19
<b>Weir, R.</b> See Browne, G.	33(1), 65
<b>West, R.</b> See Butler, L.	33(4), 155
<b>White, P.</b> See Pringle, D.M.	33(4), 115
<b>Will, C.I.</b> Knowledge in Nursing: Contemplating Life Experience	33(3), 107
<b>Willison, K.</b> See Ploeg, J.	33(2), 43
<b>Wong, M.</b> See Tiwari, A.	33(3), 63
<b>Wood, M.</b> See Tourangeau, A.E.	33(4), 71
<b>Wright, D.M.</b> See Arthur, H.M.	33(3), 17
<b>Zboril-Benson, L.R.</b> Why Nurses Are Calling in Sick: The Impact of Health-Care Restructuring	33(4), 89

## TITLES/TITRES

<b>Book Review: <i>Care Work: Gender, Labor and the Welfare State:</i></b> Tronto, J.C.	33(2), 129
<b>Book Review: <i>Cost-Effectiveness Analysis: Methods and Applications:</i></b> Cleveland, G.	33(1), 117
<b>CJNR's First "Reviewer of the Year"</b> Gagnon, A.J.	33(4), 185
<b>Commentary: Countering the Deterioration and Medicalization of Nursing:</b> Kikuchi, J.F.	33(1), 7
<b>Costs of Parturient Care: Examining Associations from the Ontario Mother and Infant Survey:</b> Roberts, J., Sword, W., Watt, S., Gafni, A., Krueger, P., Sheehan, D., & Soon-Lee, K.	33(1), 19
<b>Critical Theory: Critical Methodology to Disciplinary Foundations in Nursing:</b> Mill, J.E., Allen, M.N., & Morrow, R.A.	33(2), 109
<b>Designer's Corner: Centring the Home in Research:</b> Dyck, I.	33(2), 83
<b>Designer's Corner: Conducting Health Research with Vulnerable Women: Issues and Strategies:</b> Heaman, M.	33(3), 81
<b>Designer's Corner: Health Human Resource Planning for the New Millennium: Inputs in the Production of Health, Illness, and Recovery in Populations:</b> Birch, S.	33(4), 109
<b>Designer's Corner: Willingness-To-Pay (WTP): The New-Old Kid on the Economic Evaluation Block:</b> Gafni, A.	33(1), 59
<b>Discourse: Nursing's Valued Resources: Critical Issues in Economics and Nursing Care:</b> Sochalski, J.	33(1), 11
<b>Discourse: The Politics of Home Care: Where Is "Home"?:</b> Anderson, J.M.	33(2), 5
<b>Discourse: Research Priorities in Gender and Health:</b> Stewart, M., Eastlick Kushner, K., & Spitzer, D.L.	33(3), 5
<b>Editorial: A Matter of Choices:</b> Gottlieb, L.N.	33(1), 3
<b>The Effects of Organizational Culture on Nursing Professionalism: Implications for Health Resource Planning:</b> Manojlovich, M., & Ketefian, S.	33(4), 15
<b>Evaluation of a Weekend Respite Program for Persons with Alzheimer Disease:</b> Perry, J., & Bontinen, K.	33(1), 81
<b>Fostering Partnerships Between Peers and Professionals:</b> Stewart, M.J., & Reutter, L.	33(1), 97
<b>Guest Editorial: Home Care in Canada: Housing Matters:</b> McKeever, P.	33(2), 3
<b>Guest Editorial: Women's Health:</b> Gagnon, A.	33(3), 3
<b>Guest Editorial and Discourse: Where to From Here?:</b> O'Brien-Pallas, L.	33(4), 3
<b>Happenings: Focus on Health-Care Settings: The Home Care Evaluation and Research Centre:</b> Guerriere, D., McKeever, P., & Coyte, P.	33(1), 77

- Happenings: Making Evidence-Based Practice a Reality:  
The National Center for Children, Families and Communities:**  
O'Brien, R.A., & Moritz, P. 33(2), 87
- Happenings: Nursing Matters: The Nursing and Health  
Outcomes Project of the Ontario Ministry of Health  
and Long-Term Care:** Pringle, D.M., & White, P. 33(4), 115
- Home Care in Canada: Passing the Buck:** Coyte, P.C., & McKeever, P. 33(2), 11
- A Hospital-Level Analysis of the Work Environment and  
Workforce Health Indicators for Registered Nurses  
in Ontario's Acute-Care Hospitals:**  
Shamian, J., Kerr, M.S., Spence Laschinger, H.K., & Thomson, D. 33(4), ??
- Impressions of Breastfeeding Information and Support  
Among First-Time Mothers Within a Multiethnic Community:**  
Loiselle, C.G., Semenik, S.E., Côté, B., Lapointe, M., & Gendron, R. 33(3), 31
- The Intersection of Relational and Cultural Narratives:  
Women's Abortion Experiences:** McIntyre, M., Anderson, B.,  
& McDonald, C. 33(3), 47
- Knowledge in Nursing: Contemplating Life Experience:** Will, C.I. 33(3), 107
- The Material and Social Predicaments of Home:  
Women's Experiences After Aortocoronary Bypass Surgery:**  
Angus, J. 33(2), 27
- Methodological Issues in Health Human Resource Planning:  
Cataloguing Assumptions and Controlling for Variables  
in Needs-Based Modelling:** Tomblin Murphy, G. 33(4), 51
- Negotiating Care of Frail Elders: Relationships  
Between Community Nurses and Family Caregivers:**  
Ward-Griffin, C. 33(2), 63
- Nurses Begin a National Plan for the Integration  
of Supportive Care in Health Research, Practice, and Policy:**  
Butler, L., Love, B., Reimer, M., Browne, G., Downe-Wamboldt,  
B., West, R., & Banfield, V. 33(4), 155
- Nursing-Related Determinants of 30-Day Mortality  
for Hospitalized Patients:** Tourangeau, A.E., Giovannetti, P.,  
Tu, J.V., & Wood, M. 33(4), 71
- Perceived Support Needs of Family Caregivers and Implications  
for a Telephone Support Service:** Ploeg, J., Biehler, L.,  
Willison, K., Hutchison, B., & Blythe, J. 33(2), 43
- Recruitment of Community-Dwelling Older Adults  
for Nursing Research: A Challenging Process:**  
Hawranik, P., & Pangman, V. 33(4), 171
- Ren and Yuan: A Cultural Interpretation of Chinese Women's  
Responses to Battering:** Tiwari, A., Wong, M., & Ip, H. 33(3), 63
- Sense of Self: Voices of Separation and Connection in Women  
Who Have Experienced Abuse:** Belknap, R.A. 33(4), 139
- Sticks and Stones: Racism as Experienced by Adolescents  
in New Brunswick:** Baker, C., Varma, M., & Tanaka, C. 33(3), 87
- Stress and the Effects of Hospital Restructuring in Nurses:**  
Greenglass, E.R., & Burke, R.J. 33(2), 93



<b>A Survey of Web-Based Health Human Resource Planning Activities in Canada:</b> Tomblin Murphy, G., & Barrath, D.	33(4), 123
<b>Towards Ethical Inquiry in the Economic Evaluation of Nursing Practice:</b> Rodney, P., & Varcoe, C.	33(1), 35
<b>Translating Research: The Costs and Effects of Addressing the Needs of Vulnerable Populations: Results of 10 Years of Research:</b> Browne, G., Roberts, J., Byrne, C., Gafni, A., Weir, R., & Majumdar, B.	33(1), 65
<b>Why Nurses Are Calling in Sick:</b> <b>The Impact of Health-Care Restructuring:</b> Zboril-Benson, L.R.	33(4), 89
<b>Women and Heart Disease: The Treatment May End But the Suffering Continues:</b> Arthur, H.M., Wright, D.M., & Smith, K.M.	33(3), 17

**Reviewers/Révisseurs**

**Volume 33: 2001–2002**

*The Canadian Journal of Nursing Research is indebted to the persons below who served as reviewers for Volume 33. They gave generously of their time and shared their knowledge, and in so doing have contributed greatly to the editorial process and to the development of nursing knowledge.*

*La Revue canadienne de recherche en sciences infirmières est reconnaissante envers les personnes ci-dessous nommées pour avoir révisé son volume 33. Ces personnes ont généreusement donné de leur temps et ont partagé leur savoir. Ce faisant, elles ont largement contribué au processus éditorial et au développement des connaissances en sciences infirmières.*

Denise Alcock  
University of Ottawa

Joan Anderson  
University of British Columbia

Jan Angus  
University of Toronto

Jane Aronson  
McMaster University

Cynthia Baker  
Université de Moncton

Peri Ballantyne  
University of Toronto

Pat Baranek  
University of Toronto

Andrea Baumann  
McMaster University

Helene Berman  
University of Western Ontario

Stephen Birch  
McMaster University

Jennifer Blythe  
McMaster University

Kristin Bjornsdottir  
University of Iceland

Joan Bottorff  
University of British Columbia

Patricia Brandt  
University of Washington

Pamela Brink  
University of Alberta

Janet Bryanton  
University of Prince Edward Island

Ronald Burke  
York University

Lorna Butler  
Dalhousie University

Franco Carnevale  
McGill University

Donna Ciliska  
McMaster University

Heather Clarke  
Health and Nursing Policy,  
Research and Evaluation Consulting

Sean Clarke  
University of Pennsylvania

William Cody  
University of North Carolina,  
Charlotte

Robin Cohen  
McGill University

Sylvie Cossette  
Université de Montréal

Cheryl Cott  
University of Toronto

Barbara Davies  
University of Ottawa

Mary Louise Drake  
University of Windsor

Christine Duffield  
University of Technology, Australia

Linda Edgar  
McGill University

Kim England  
University of Washington, Seattle

Adeline R. Falk-Rafael  
York University

Linda Ferguson  
University of Saskatchewan

Elaine Gallagher  
University of Victoria

Denise Gastaldo  
University of Toronto

Jackie Gerlach  
KLF&A Community Care Access  
Center, Kingston, Ontario

Lan Gien  
Memorial University of  
Newfoundland

Monique Gignac  
University of Toronto

Susan Gillam  
Sir Wilfred Grenfell College, Corner  
Brook, Newfoundland

Angela Gillis  
St. Francis Xavier University

Norbert Gilmore  
McGill University

Esther Greenglass  
York University

Pat Griffin  
University of Ottawa

Denise Guerriere  
University of Toronto

Brad Hagen  
University of Lethbridge

Margaret Harrison  
Loeb Research Institute  
Ottawa Civic Hospital

Pamela Hawranik  
University of Manitoba

Rosemary Herbert  
University of Prince Edward Island

B. Ann Hilton  
University of British Columbia

Colin Holmes  
Deakin University, Australia

Jean Hughes  
Dalhousie University

Diane Irvine Doran  
University of Toronto

Susan Jaglal  
University of Toronto

Carol Jillings  
University of British Columbia

Karyn Kaufman  
McMaster University

Norah Keating  
University of Alberta

Pia Kontos  
University of Toronto

Andrea-Maria Laizner  
Université de Montréal

Shoo Lee  
University of British Columbia

Sandy LeFort  
Memorial University of  
Newfoundland

Louise Lemieux-Charles  
University of Toronto

Jane Lipscomb  
University of Maryland

Julienne Lipson  
University of California at San  
Francisco (UCSF)

Jo Logan  
University of Ottawa

Carmen Loiselle  
McGill University

Kathleen MacMillan  
Ontario Ministry of Health and  
Long-Term Care

Carole McWilliam  
University of Western Ontario

Michele Mendes  
Boston College

Jan Morse  
University of Alberta

Anne Neufeld  
University of Alberta

Jacqueline Oxman-Martinez  
McGill University

Barbara Paterson  
University of British Columbia

Carolyn Pepler  
McGill University

Elizabeth Peter  
University of Toronto

George Pink  
University of Toronto

Jenny Ploeg  
McMaster University

Dorothy Pringle  
University of Toronto

Mary Ellen Purkis  
University of Victoria

James Rankin  
University of Calgary

Janet Rennick  
Montreal Children's Hospital

Linda Reutter  
University of Alberta

Marie-Claire Richer  
McGill University Health Centre

Judith Ritchie  
McGill University

Ellen Rukholm  
Laurentian University

Marla Salmon  
Emory University

Erna Snelgrove-Clarke  
IWK Health Centre, Halifax

Souraya Sidani  
University of Toronto

Anne Snowdon  
University of Windsor

Karen Spalding  
University of Toronto

Denise Spitzer  
University of Alberta

Janet Storch  
University of Victoria

Vicki Strang  
University of Alberta

Karen Then  
University of Calgary

Barbara Thomas  
University of Windsor

Sally Thorne  
University of British Columbia

Karen Thorpe  
University of Lethbridge

Michel Vézina  
Université Laval

Bilkis Vissandjee  
Université de Montreal

Patricia Wall  
University of Lethbridge

Cathy Ward-Griffin  
University of Western Ontario

Robin Weir  
McMaster University

Janine Wiles  
Queen's University

Allison Williams  
University of Saskatchewan

Diana Lynn Woods  
University of Washington, Seattle

Nancy Fugate Woods  
University of Washington

Francine Wynn  
University of Toronto

Nancy Young  
Hospital for Sick Children, Toronto

Phyllis Zelkowitz  
McGill University

## ***Addiction & Dependence***

**December 2002 (vol. 34, no. 3)**

In nursing and in other disciplines, addiction, dependence, and addictive behaviours and their health consequences are of growing social concern. This issue will focus on all aspects of these phenomena as they intersect with nursing practice in all health-care settings. We are interested in addiction in all its forms (e.g., tobacco, drugs, alcohol), any behaviour that results in a physiological dependency (e.g., eating disorders), the effects on individual and family well-being across the lifespan, physical and mental health outcomes, and prevention and intervention. We are also interested in individual, parental/family, and social/environmental factors that place individuals at risk or that lessen the risk of these phenomena. We are particularly interested in the testing of interventions and the factors that contribute to an intervention's success. We plan to mainly publish research reports but will consider papers on theory development and testing. We welcome investigations that use either qualitative or quantitative data or a combination of the two.

**Guest Editor: Dr. Pamela Ratner**

**Submission Deadline: April 15, 2002**

## ***Culture & Gender***

**March 2003 (vol. 34, no. 4)**

Culture and gender have been identified as important determinants of health. For this issue, we invite papers that examine the interaction of culture and gender with other health determinants, and the influence of culture and gender on the outcomes of nursing interventions. Manuscripts that describe research studies, present a systematic review, or provide a theoretical analysis will be considered. We are particularly interested in papers that focus on innovative interventions designed to mediate the influence of culture or gender on collective health action, individual behaviour change, social environments, health-service utilization, or health status. We welcome papers describing studies undertaken either in Canada or internationally.

**Guest Co-editors: Dr. Nancy Edwards and Dr. Judy Mill**

**Submission Deadline: July 15, 2002**

Please send manuscripts to:

The Editor, *Canadian Journal of Nursing Research*

McGill University School of Nursing

3506 University Street, Montreal, QC H3A 2A7 Canada

e-mail: joanna.toti@mcgill.ca

**CJNR 2000–2004:  
Focus Topics, Deadlines, and Publication Dates**

---

**VOLUME 32**

**Primary Health Care**

Submission deadline: October 15, 1999

Publication date: June 2000

**Philosophy / Theory**

Submission deadline: January 15, 2000

Publication date: September 2000

**Chronicity**

Submission deadline: April 30, 2000

Publication date: December 2000

**Abuse & Violence**

Submission deadline: July 30, 2000

Publication date: March 2001

**VOLUME 33**

**Economics of Nursing Care**

Submission deadline: October 15, 2000

Publication date: June 2001

**Home Care**

Submission deadline: January 15, 2001

Publication date: September 2001

**Women's Health**

Submission deadline: April 15, 2001

Publication date: December 2001

**Health Resources Planning**

Submission deadline: July 15, 2001

Publication date: March 2002



**VOLUME 34**

**Coping / Adaptation**

Submission deadline: October 15, 2001

Publication date: June 2002

**Ethics, Values, & Decision-Making**

Submission deadline: January 15, 2002

Publication date: September 2002

**Addiction**

Submission deadline: April 15, 2002

Publication date: December 2002

**Culture & Gender**

Submission deadline: July 15, 2002

Publication date: March 2003

**VOLUME 35**

**Nursing-Care Effectiveness**

Submission deadline: October 15, 2002

Publication date: June 2003

**Gerontology**

Submission deadline: January 15, 2003

Publication date: September 2003

**Health Promotion**

Submission deadline: April 15, 2003

Publication date: December 2003

**Continuity & Transitional Care**

Submission deadline: July 15, 2003

Publication date: March 2004

## **Call for Reviewers / Examinatrices recherchées**

---

The purpose of peer review in the publication of nursing research is to ensure the advancement of nursing knowledge through critical analysis of submitted manuscripts. Through such analysis, constructive criticism is provided to the authors and publication recommendations are made to the editors. The quality of the manuscripts published in the *Canadian Journal of Nursing Research* is due, in large part, to the input of its reviewers.

Excellent reviewers possess the following attributes: high standards; the ability to identify key issues and defend a position taken on them, to see how a manuscript might add to the existing body of knowledge, and to communicate effectively with authors; a high degree of objectivity; and a willingness to learn from authors. The *CJNR* is seeking researchers who possess these attributes and who are interested in contributing to the advancement of nursing knowledge in this way.

If you are interested in being considered as a regular reviewer for the *CJNR*, please contact our office for more information. A reviewer's initiation package is issued to each new reviewer.

*Canadian Journal of Nursing Research*  
3506 University Street, Room 210  
Montreal, Quebec H3A 2A7 Canada  
514-398-4160; fax 514-398-8455  
e-mail joanna.toti@mcgill.ca



## **Centre universitaire de santé McGill McGill University Health Centre**



**La bourse EURÉKA! de recherche  
en Sciences infirmières**

**The EUREKA! Fellowship  
in Nursing Research**

The EUREKA! Fellowship in Nursing Research at the McGill University Health Centre presents a unique opportunity for nurses in clinical practice who are passionate about finding answers to clinical questions. The Award enables a nurse to function for one year as a Nursing Research Fellow at the MUHC.

The EUREKA! Fellowship is a gift of time. The Fellow has time and support to pursue a research project. The project can be in any clinical area of nursing.

During the one-year Award, the Fellow will work in the MUHC Nursing Research Department with the support of an experienced nurse researcher and/or researchers from another discipline.

**APPLICATION FORMS available from:**

Department of Nursing Research  
McGill University Health Centre  
Montreal General Hospital Site  
1650 Cedar Avenue  
Room D6-156  
Montreal, QC H3G 1A4  
(514) 934-1934, local 4188

**APPLICATION DEADLINE: May 15, 2002**

# McGill University

## School of Nursing

### *Leading the way...*

#### *A Unique Philosophy*

- Internationally recognized for its unique approach to nursing and health promotion

#### *A Unique University*

- World-renowned McGill is one of Canada's oldest universities, located in downtown Montreal

#### *A Unique City*

- Montreal is a diverse multicultural metropolis with European flair

---

#### **PhD** (offered jointly with the Université de Montréal)

- Designed to train researchers and prepare leaders in the profession and in the health-care system

#### **Master of Science**

- Open to nurses holding a baccalaureate degree and to baccalaureate graduates with no previous preparation in nursing (generic master's)
- Prepares clinicians and researchers to play a crucial role in shaping health care

#### **Bachelor of Science in Nursing**

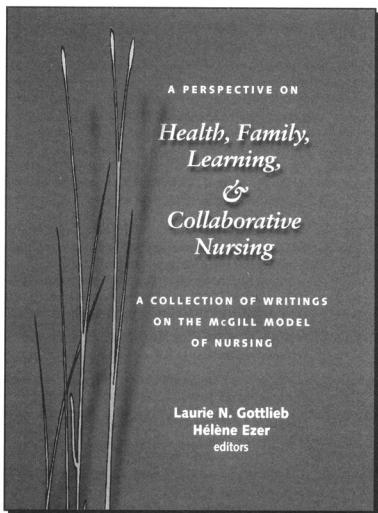
- Prepares nurses to deal effectively with complex health issues relating to the individual, the family, and the community

#### **Postgraduate Diploma of Nursing**

- For registered nurses from a college diploma program who wish to enter a nursing program
- Can be completed on a full-time or part-time basis;
- Graduates are eligible to apply for a master's degree

3rd Printing in 4 Years!

## THE MCGILL MODEL OF NURSING



A book on a timely nursing model.  
A perspective to guide nursing practice, education, administration,  
and research in today's health-care system.

410 pp, \$40 (\$30 US)

To order, please contact:

Joanna Toti

McGill University School of Nursing  
3506 University Street, Montreal, Quebec H3A 2A7

Tel: 514-398-6172 Fax: 514-398-8455

E-mail: [joanna.toti@mcgill.ca](mailto:joanna.toti@mcgill.ca)

## Information for Authors

The *Canadian Journal of Nursing Research* is a quarterly journal. Its primary mandate is to publish nursing research that develops basic knowledge for the discipline and examines the application of the knowledge in practice. It also accepts research related to education and history and welcomes methodological, theory, and review papers that advance nursing science. Letters or commentaries about published articles are encouraged.

**Procedure:** Three double-spaced typewritten copies of the manuscript on 8½" x 11" paper are required as well as an electronic copy to joanna.toti@mcgill.ca. 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. E-mail: <jtoti@po-box.mcgill.ca>.

### Manuscripts

All manuscripts must follow the 5th 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. Footnotes should not be used.

**Title page:** This should include author name(s), degrees, positions and affiliations, information on financial assistance, acknowledgements, and contact information.

**Abstract:** Research articles must include a summary of 100–150 words on the purpose, design, sample, findings, and implications of the research. 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 20 double-spaced typed pages including references, tables, and figures (which are placed at the end of the text). Articles must be written in English.

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

**Tables and figures:** Tables and figures should appear only when absolutely necessary. They must be self-explanatory and summarize relevant information without duplicating the content of the text. Each table must include a short title, omit abbreviations, and be typed on a separate page. Figures must be in camera-ready form.

**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 à 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. De plus, vous devez soumettre une copie électronique de votre manuscrit à joanna.toti@mcgill.ca. 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.

### Manuscripts

La présentation du manuscrit doit respecter les normes du *Publication Manual of the American Psychological Association*, 5<sup>e</sup> édition. 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.

**Page titre :** Pour assurer la lecture anonyme des textes soumis, seule la page titre du manuscrit comprendra le nom, l'adresse et l'affiliation de(s) auteur(s), les diplômes obtenus ainsi que l'aide financière reçue et les remerciements.

**Résumé :** Un résumé d'environ 100 à 150 mots chacun doit précéder le texte. Ce résumé devrait comprendre l'objectif, la méthode, les résultats et les retombées de la recherche. Les manuscrits qui concernent la théorie et les analyses critiques doivent inclure une identification des objectifs principaux, le cadre conceptuel utilisé pour l'analyse des données et un résumé de la discussion.

**Texte :** La longueur totale d'un manuscrit, incluant les tableaux, les figures et les références, ne doit pas dépasser 20 pages, dactylographiées à double interligne. Les articles doivent être rédigés en anglais.

**Références :** Les références doivent paraître en ordre alphabétique, à double interligne et faire suite au texte. Les noms des auteurs de même que les citations de revues doivent être écrits au long.

**Tableaux et schémas :** Les tableaux et schémas doivent paraître seulement si nécessaire. Ils doivent résumer des données pertinentes sans redire le contenu du texte. Chaque tableau doit comprendre un titre, ne pas comprendre d'abréviations et être dactylographié sur une page à part. Vous devez remettre les originaux des schémas dessinés à l'encre de Chine et prêts à être photographiés.

**Examen des manuscrits et renseignements relatifs à la publication :** Lorsqu'un manuscrit est soumis pour des fins de publication à la *Revue canadienne de recherche en sciences infirmières*, le comité de rédaction entame le processus de lecture : il envoie à un minimum de deux réviseurs, spécialistes du sujet dont traite le texte, un exemplaire anonyme du manuscrit ainsi que la grille d'évaluation des manuscrits. Sur réception des évaluations des réviseurs, le comité de rédaction décide si le texte peut être publié et en informe l'auteur responsable en lui faisant part des évaluations des réviseurs. Ce processus nécessite habituellement douze semaines. Si la décision est favorable, le comité peut proposer des corrections que l'(les) auteur(s) devra(ont) effectuer avant que le texte ne soit publié.

**Copie électronique :** Les auteurs doivent remettre un exemplaire de leur article sur disquette, suite à l'acceptation finale de l'article.

**Canadian Journal of Nursing Research**  
**Revue canadienne de recherche en sciences infirmières**

The *Canadian Journal of Nursing Research* provides a forum in Canada for the publication of research and scholarly articles relevant to nursing and health. You and your agency are invited to subscribe to this journal.

You also are invited to submit articles to the *Canadian Journal of Nursing Research*. *CJNR* publishes articles on clinical research, methodological issues, education research, and historical research, as well as theory and position papers that advance nursing knowledge. Information for authors and the criteria for evaluating articles can be obtained from the Managing Editor.

----- **SUBSCRIPTION FORM** -----

To the Managing Editor  
*Canadian Journal of Nursing Research*  
School of Nursing, McGill University  
3506 University Street, Montreal, Quebec H3A 2A7 Canada  
Tel: 514-398-4160 • Fax: 514-398-8455 • E-mail: [jtoti@po-box.mcgill.ca](mailto:jtoti@po-box.mcgill.ca)  
[www.nursing.mcgill.ca](http://www.nursing.mcgill.ca)

From

---

---

---

Enclosed is my cheque for \$\_\_\_\_\_ payable to *Canadian Journal of Nursing Research*

Visa # \_\_\_\_\_ Expiry date \_\_\_\_\_

MasterCard # \_\_\_\_\_ Expiry date \_\_\_\_\_

NEW SUBSCRIPTION ☐ RENEWAL SUBSCRIPTION ☐

	One Year (Four Issues)	Two Years (Eight Issues)
Individual*	<input type="checkbox"/> \$ 75	<input type="checkbox"/> \$140
Institution*	<input type="checkbox"/> \$160	<input type="checkbox"/> \$300
Student*	<input type="checkbox"/> \$ 45	<input type="checkbox"/> \$ 90

*Canadian Journal of Nursing Research* / Canadian Association for Nursing Research –  
joint subscription & membership

Individual	<input type="checkbox"/> \$100
Student	<input type="checkbox"/> \$ 65

\* There is a \$16 surcharge per year for foreign subscriptions.  
Canadian subscribers: Please add 7% GST.

# *Revue canadienne de recherche en sciences infirmières* *Canadian Journal of Nursing Research*

La *Revue canadienne de recherche en sciences infirmières* constitue au Canada une tribune pour la publication d'articles savants et de recherche concernant les sciences infirmières et la santé. Nous vous invitons, vous et votre organisme, à vous abonner à la revue.

Nous vous invitons également à présenter des articles à la *Revue canadienne de recherche en sciences infirmières*. La revue publie des articles traitant de recherche clinique, de questions méthodologiques, de recherche en éducation, de recherche historique ainsi que des articles théoriques et des prises de position susceptibles de faire avancer les connaissances dans le domaine des sciences infirmières. On peut également obtenir de l'Administratrice de la revue les renseignements à l'intention des auteurs ainsi que les critères d'acceptation des articles.

## ----- FORMULAIRE D'ABONNEMENT -----

Administratrice de la revue  
*Revue canadienne de recherche en sciences infirmières*  
École des sciences infirmières, Université McGill  
3506, rue University, Montréal (Québec) H3A 2A7 Canada  
Tél. (514) 398-4160 • Téléc. (514) 398-8455  
Courriel [jtoti@po-box.mcgill.ca](mailto:jtoti@po-box.mcgill.ca)  
[www.nursing.mcgill.ca](http://www.nursing.mcgill.ca)

*Expéditeur*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Veuillez trouver ci-joint un chèque de \_\_\_\_\_ \$

libellé au nom de la *Revue canadienne de recherche en sciences infirmières*

Visa # \_\_\_\_\_ Date d'expiration \_\_\_\_\_

MasterCard # \_\_\_\_\_ Date d'expiration \_\_\_\_\_

NOUVEL ABONNEMENT ☐ RENOUVELLEMENT ☐

### Un an (quatre numéros)

### Deux ans (huit numéros)

Personnel\* ☐ 75 \$

☐ 140 \$

Institution\* ☐ 160 \$

☐ 300 \$

Étudiant\* ☐ 45 \$

☐ 90 \$

*Revue canadienne de recherche en sciences infirmières* / Association canadienne  
pour la recherche infirmière – adhésion et abonnements conjoints

Personnel ☐ 100 \$

Étudiant ☐ 65 \$

\* Les abonnements provenant de l'étranger font l'objet d'un supplément de 16 \$ par année. Les abonnés canadiens doivent ajouter 7 % pour la T.P.S.

*The Canadian Journal of Nursing Research/Revue canadienne de recherche en sciences infirmières* is published quarterly by the School of Nursing, McGill University, 3506 University Street, Montreal, Quebec H3A 2A7. Tel: 514-398-4160. Fax: 514-398-8455. E-mail: <jtoti@po-box.mcgill.ca>. Letters regarding subscriptions, change of address, and other business matters should be sent to the Managing Editor.

*La Revue canadienne de recherche en sciences infirmières/Canadian Journal of Nursing Research* est publiée quatre fois par année par l'École des sciences infirmières de l'Université McGill, 3506, rue University, Montréal, Québec H3A 2A7. Tél : (514) 398-4160. Téléc : (514) 398-8455. Courrier élec : jtoti@po-box.mcgill.ca. Veuillez vous adresser à l'Administratrice de la revue pour les abonnements, changements d'adresse, et autres questions d'affaires.

**ADVERTISEMENTS:** Full-page display, \$275; half-page display, \$150. Canadian advertisers please add 7% GST.

**ANNONCES :** 275 \$ la page; 150 \$ la demi-page. Veuillez ajouter 7 % pour la T.P.S.

**BACK ISSUES:** Available at \$25/copy or \$100/year prior to 1999. 1999 to present back issues and single copies are pro-rated on the current subscription rate. Xerox copies are available at a minimum of \$10 per article. Canadian purchasers please add 7% GST.

**ANCIENS NUMÉROS:** 25 \$ le numéro ou 100 \$ par année pour les numéros d'avant 1999. Pour les numéros de 1999 à maintenant : le coût des numéros antérieurs et des exemplaires simples est fixé selon les frais d'abonnement actuel. On peut se procurer les photocopies d'articles pour un minimum de 10 \$ par article. Acheteurs canadiens, veuillez ajouter 7 % pour la T.P.S.

This issue has been supported by an SSHRC (647-98-0054) grant.

Nous avons reçu des subventions du CRSHC (647-98-0054) pour ce numéro.

We acknowledge the financial assistance of the Government of Canada, through the Publications Assistance Program (PAP), towards our mailing costs.

Nous reconnaissons l'aide financière du gouvernement du Canada, par l'entremise du Programmed'aide aux publications (PAP), pour nos dépenses d'envoi postal.

**ISSN 0844-5621**

*The Canadian Journal of Nursing Research* is indexed in / *Revue canadienne de recherche en sciences infirmières* se trouve dans les index suivants:

PsycINFO, Medline, HealthSTAR, CINAHL, AIDSLine, CancerLit, Bioethics-Line, CBCA, BNI, Socialfile (Sociological Abstracts), International Nursing Index, Repere, Infotrieve.

Dépot légal – Bibliothèque nationale du Québec, 2002

© Copyright: McGill University, School of Nursing, 2002

Publication Mail Registration No. 09967

Canada Post Agreement No. 40016570

**Focus: Health Resource Planning /  
Planification des ressources de santé**

Guest Editorial and Discourse / *Collaboration spéciale et discours :*  
Where to From Here?

**Linda O'Brien-Pallas**

The Effects of Organizational Culture on Nursing Professionalism:  
*Les effets de la culture organisationnelle sur le professionnalisme des infirmières*  
**Milisa Manojlovich and Shaké Ketefian**

Workforce Health Indicators for Registered Nurses in Ontario's Acute-Care Hospitals  
*Des indicateurs de santé au travail pour les infirmières autorisées  
travaillant dans les hôpitaux de soins actifs en Ontario*  
**Judith Shamian, Michael Steven Kerr, Heather K. Spence Laschinger,  
and Donna Thomson**

Methodological Issues in Health Human Resource Planning  
*Questions d'ordre méthodologique dans la planification des ressources humaines*  
**Gail Tomblin Murphy**

Nursing-Related Determinants of 30-Day Mortality for Hospitalized Patients  
*Les facteurs relatifs aux soins infirmiers ayant une incidence sur le taux de mortalité  
sur trente jours chez les hospitalisés*  
**Ann E. Tourangeau, Phyllis Giovannetti, Jack V. Tu, and Marilyn Wood**

Why Nurses Are Calling in Sick: The Impact of Health-Care Restructuring  
*Les raisons pour lesquelles les infirmières s'absentent du travail :  
conséquences de la restructuration des soins de santé*  
**Leona R. Zboril-Benson**

Designer's Corner / *Le Coin du concepteur :*  
*Health Human Resource Planning for the New Millennium:*  
*Inputs in the Production of Health, Illness, and Recovery in Populations*  
**Stephen Birch**

Happenings / *L'Événement :* The Nursing and Health Outcomes Project  
**Dorothy M. Pringle and Peggy White**

A Survey of Web-Based Health Human Resource Planning Activities in Canada  
**Gail Tomblin Murphy and Debra Barrath**

Voices of Separation and Connection in Women Who Have Experienced Abuse  
*Le sentiment de séparation et de connexion chez les survivantes de violence conjugale*  
**Ruth Ann Belknap**

Nurses Begin a National Plan for the Integration of Supportive Care  
in Health Research, Practice, and Policy  
*Les infirmières amorcent un plan national d'intégration des soins de soutien  
aux sphères de la recherche, de la pratique et des orientations*  
**Lorna Butler, Barbara Love, Marlene Reimer, Gina Browne,  
Barbara Downe-Wamboldt, Roy West, and Valerie Banfield**

Recruitment of Community-Dwelling Older Adults for Nursing Research  
*Le recrutement de personnes âgées résidant dans la communauté  
pour les besoins de la recherche en sciences infirmières*  
**Pamela Hawranik and Verna Pangman**