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Résumé

Un portrait des infirmières autorisées dans les régions rurales et éloignées du Canada

Norma J. Stewart, Carl D'Arcy, J. Roger Pitblado, Debra G. Morgan, Dorothy Forbes, Gail Remus, Barbara Smith, Mary Ellen Andrews, Julie Kosteniuk, Judith C. Kulig, and Martha L. P. MacLeod

La recherche sur les questions relatives à la pratique infirmière dans les régions rurales et éloignées du Canada est très limitée. Ce rapport décrit la méthodologie et les premiers résultats d'une étude approfondie sur les infirmières autorisées (IA) qui exercent leur profession en dehors des aires de migration alternantes des grands centres urbains. Cette étude visait à déterminer qui dispense les soins infirmiers dans les régions rurales et éloignées du Canada; la nature et l'envergure de la pratique infirmière; la satisfaction professionnelle des infirmières et le soutien dont elles bénéficient au sein de la communauté et de leur profession. L'étude a été effectuée par voie de questionnaire envoyé par la poste avec suivi constant; les données ont été collectées à partir d'un échantillonnage aléatoire stratifié des infirmières autorisées des régions rurales et de toutes les infirmières autorisées qui travaillent dans les Territoires du Nord et les postes (régions) isolés. L'analyse est fondée sur des comparaisons régionales des données démographiques et du cadre de travail principal ainsi que sur des comparaisons provinciales des niveaux de satisfaction par rapport au travail et à la collectivité. L'étude s'inscrit dans le cadre d'un projet multiméthodes plus large visant à informer les pouvoirs publics sur la pratique des soins infirmiers dans les régions rurales du Canada.

Mots clés : rurales, éloignées, infirmières, satisfaction professionnelle, satisfaction au sein de la communauté.

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A Profile of Registered Nurses in Rural and Remote Canada

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Research on nursing practice issues in rural and remote areas of Canada is very limited. This report describes the method and initial results of a comprehensive survey of registered nurses (RNs) practising outside the commuting zones of large urban centres, designed to determine: who practises nursing in rural and remote Canada; the nature and scope of their nursing practice; and their satisfaction with their work, community, and practice supports. Using a mailed questionnaire with persistent follow-up, the data-collection frame included a stratified random sample of rural RNs and the full population of RNs who worked in the northern territories and outpost ("remote") settings. The analyses focus on regional comparisons of demographics and primary work settings and on provincial comparisons of satisfaction levels related to work and community. The survey is part of a larger multi-method project intended to inform policy on rural nursing practice in Canada.

Keywords: rural, remote, nurses, job satisfaction, community satisfaction

Recently there has been considerable interest in health human resources in general, and nursing services in particular, but most of the Canadian research on the latter has focused on urban workplaces (Baumann et al., 2001). Here, we describe the methods and initial results from a national survey of registered nurses (RNs) in rural and remote work settings across Canada.

The survey sought to describe: who practices nursing in rural and remote areas of Canada; the nature and scope of nursing practice in these areas; and the nurses' satisfaction with their workplace, their communities, and their educational and interdisciplinary supports. Since this was the first nation-wide survey of Canadian RNs working in rural and remote settings, we wanted to include a broad range of questions related to the individual nurse, his or her worklife, and the community context. The survey is part of a larger study titled The Nature of Nursing Practice in Rural and Remote Canada (MacLeod, Kulig, Stewart, Pitblado, & Knock, 2004).

Methods

This section outlines the development of the questionnaire, the sampling frame, and the survey method. Ethics approval for the survey was received from the University of Saskatchewan's Behavioural Research Ethics Board.

Questionnaire Development

The original questionnaire was developed in relation to issues identified in previous research in Australia (Hegney, Pearson, & McCarthy, 1997), Canada (MacLeod, 1998; Remus, Smith, & Schissel, 2000), and the United States (Dunkin, Juhl, Stratton, Geller, & Ludtke, 1992). It was an iterative process involving nine revisions of the English version, translation into French, and a revision of the French translation. The content domains were demographic, characteristics of the work environment and nursing practice roles, the context of practice (community, educational, and interdisciplinary supports for practice), and issues related to nursing worklife (e.g., work satisfaction, safety, health, and career plans). The framework for selection of the content was based on the individual nurse, the workplace, the community, and the interaction (person-environment fit) between the individual nurse and the workplace, community, and supports for practice.

Content Validity Process

The initial set of questionnaire items was derived from the experience of the research team and from the literature, using, where possible, scales with satisfactory psychometric properties. Although each embedded scale had a theoretical orientation in its original design, the objective here was to include a comprehensive set of questions that could be used to examine issues relevant to rural and remote nursing practice from a variety of perspectives. Since much of the previous research and theory on nursing worklife had focused on urban environments (e.g., Baumann et al., 2001), the inclusion of community as a major concept in the framework was intended to capture the issue of "being in and of the community" (MacLeod, 1998, p. 5), which shapes practice in a way not found in urban settings.

Content validation began with a review of items first by the Survey Investigator Team and Principal Investigators from the larger project (authors) and then by the full survey Advisory Team of 39 investigators and decision-makers, who participated in the process over the Internet through a national listserv developed for the larger project. The objective of the content validity assessment was to determine whether the range of questionnaire items would provide a valid description of the nature of

nursing practice in rural and remote Canada. Since there was no gold standard available for this purpose, the expert judgement of researchers, advisors, and nurses practising in rural and remote Canada was used to determine validity.

Content validity was further evaluated by piloting the seventh version of the questionnaire with a convenience sample of RNs who were currently or had recently been working in rural or remote areas delivering primary acute care, community care, home care, or long-term care. Questionnaires with attached evaluation forms were mailed to nurse administrators, along with written instructions for the respondents to complete the questionnaire as if they were study participants, and then provide written evaluative comments related to the relevance of the content to their practice, questionnaire format, time to complete, clarity, and overall reaction to the questionnaire. The nurse administrators contacted 49 RNs who met the study criteria, 33 of whom returned the questionnaire and the evaluation. Most comments were positive (55% favourable, 12% very favourable) or neutral (12%); 67% of the pilot sample said the questions were relevant to their clinical practice in rural and remote areas. Comments on the survey instrument were used to revise the questionnaire in two more iterations, with each stage reviewed by the research team and advisors, until consensus was reached that the content of the questionnaire would provide a valid description of the nature of rural and remote nursing practice in Canada.

The content validity phase of the study was completed prior to translation of the questionnaire into French. After an official translator had completed the translation, a final review was conducted to check for consistency of meaning in both languages. Eleven bilingual nurses were contacted through the investigator and the advisory team. These nurses completed the questionnaire as if they were study participants, with their review focusing on clarity and word choice. One participant had extensive experience in translating examinations for the Canadian Nurses Association (CNA); in this instance, the CNA procedure was followed, whereby the reviewer had access to both the English and French versions of the questionnaire. All reviews were examined by the survey team members and the original translator before the French version was finalized.

Linkage to RN Database

The demographics and employment sections of the questionnaire were derived from the categories of the Registered Nurses Database (RNDB) compiled by the Canadian Institute for Health Information (CIHI). The RNDB variables were developed from the information on the registration forms of all provincial and territorial nursing associations in Canada.

The first report (Canadian Institute for Health Information [CIHI], 2002) from the larger project (MacLeod et al., 2004) used RNDB data from the year 2000. In the questionnaire, some minor changes in wording were made based on comments by rural nurses who served as content experts. Also, we included several items that are not in the RNDB analysis (CIHI, 2002), about the licence to practice as an RN, including a list of all provinces and territories of current registration; many nurses who work in remote areas do contract work in several provinces and territories, which entails different registrations for their respective workplaces.

Embedded Scales

A Community Satisfaction Scale (Henderson-Betkus & MacLeod, 2003) was embedded in the questionnaire. The scale had 11 items plus an overall community satisfaction item. Since the overall community satisfaction item was not independent of the 11-item scale, this item was included as a potential alternative to the scale, similar to the approach described in Stamps (1997) using the Index of Work Satisfaction (IWS). The Community section of the questionnaire also included items (e.g., distance to the nearest basic referral centre and advanced referral centre) that may be used to construct two rurality indexes from the literature: the MSU [Montana State University] Rurality Index (Weinert & Boik, 1995) and the General Practice Rurality Index for Canada (Leduc, 1997). We included an open-ended question to elicit the RNs' own definitions of rurality and remoteness.

The seven-point IWS developed by Stamps (1997) was adapted for this study with some changes in wording to fit the experience of rural nurses. These changes were based on language used in a study with nurses in rural North Dakota (Dunkin, Stratton, Harris, Juhl, & Geller, 1994) and the comments made during the content validity phase of the present study. We examined the variable *importance* with an open-ended question (What is the most important thing to you about your nursing position?), which differs from the approach to importance used by both Stamps and the Dunkin research group. The practising rural nurses who evaluated the paired comparison method used by Stamps found it complex and difficult to do reliably. The method used by Dunkin et al. (1992) had a *satisfaction* question and an *importance* question for each item of the questionnaire. We were concerned that this procedure could lead to confounding of the two concepts. Therefore, we decided to explore *importance* in a separate question and ask for only the most important job characteristic.

The IWS was also modified by restricting each subscale to five items, based on the factor loadings in the studies reported by Stamps (1997).

The rationale for this was to reduce the length of our questionnaire while preserving its reliability. We did not use Stamps' subscale on Task Requirements because this concept overlapped with a subscale of the Job Content Questionnaire used in the survey. The 30-item modified IWS in the questionnaire is followed by the single item "Overall, I am very satisfied with my job" developed by Dunkin, Stratton, and Juhl (reported in Stamps). They found that the correlation between the single item and the original full-scale IWS was over .80, which they suggest reinforced "the structural integrity of the IWS" (Stamps, pp. 278–279).

The Job Content Questionnaire (Karasek & Theorell, 1990) has been widely used across many job categories. We selected three subscales (15 items in total): psychological demands, skill discretion, and decision authority. The latter two subscales may be summed to give an indicator of decision latitude. Job strain is defined by a quotient of demands over latitude. Job strain has been correlated with workplace stress and health.

Other embedded scales were a widely used health status measure, the SF-12 (Ware, Kosinski, & Keller, 1996), which is a short version of the SF-36, and the four-item version of the 14-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). These standardized scales were included to make comparisons across professions as well as within the profession of nursing in different contexts.

A questionnaire developed for a survey of rural and urban RNs in Saskatchewan (Remus et al., 2000) provided questions on scheduling, benefits, the work environment, continuing education, and career plans. The section on nursing knowledge adapted questions from an Australian study with rural nurses (Hegney et al., 1997). The definition of violence and related questions came from an international study of nurses in hospitals (Giovannetti, Shamian, Ball, Duncan, & Mallidou, 2001). Questions on distress related to aggressive behaviour were adapted from a study of residents in long-term-care settings (Middleton, Stewart, & Richardson, 1999).

An indicator of retention (i.e., intent to leave) was included from previous research in North Dakota (Dunkin et al., 1994). An open-ended question related to recruitment was: What was your reason for accepting your present position? Sections of the questionnaire that drew more heavily on the experience of the investigative team were those on advanced practice nursing and interdisciplinary supports.

Development of Sampling Frame

Each of the 12 provincial and territorial nursing associations provided assistance by giving us access to their databases of nurses licensed to practise in their jurisdiction. Anonymity and confidentiality were protected. The only geographical information that these databases provide is the

home address, including postal code, of each RN. Although there are limitations to the use of postal codes for sampling (Pitblado & Pong, 1999), registration information collected by nursing associations provided no available alternative to identify rural nurses in their workplaces.

The sampling frame was developed to include: (1) a *stratified* (by province) *random sample* representing "rural" nurses in all provinces of Canada, (2) *all* nurses who identified "nursing station (outpost/nurse clinic)" as their primary work setting, and (3) *all* nurses who work in the territories of Canada.

In this study, the definition of "rural" is that provided by Statistics Canada and equated with the term "rural and small town Canada" (Bollman & Biggs, 1992; du Plessis, Beshiri, Bollman, & Clemenson, 2001), which includes the population living outside the commuting zones of large urban centres having a core population of 10,000 or more (du Plessis et al.; Statistics Canada, 1997). An overview of general demographic and workplace characteristics comparing rural and urban RNs, based on this definition of rural, can be found in CIHI (2002).

Nurses working in outpost settings and/or registered with nursing associations in the Yukon and Northwest Territories (the latter association includes Nunavut) were identified as the "remote" sample. Some of these nurses may have worked in a community with a population larger than 10,000, and thus not "rural" as strictly defined, but still have considered themselves "remote" due to their northern location.

Procedure for Sampling

The investigators provided each of the 10 provincial nursing associations with a computer file (developed by J. R. Pitblado) containing all the rural postal codes for their province and the sample size that would provide sufficient representation for 95% confidence in results for that province. For this level of confidence to be achieved, we initially assumed that the rural-to-urban ratio of RNs would match the rural-to-urban ratio of the general population (Pitblado & Pong, 1999). Later, we were able to verify that this level of confidence had been achieved, by comparing the number of responses to the statistical population of rural RNs for each province and territory (CIHI, 2002).

The custom files, using the October 1999 postal-code conversion file prepared by Statistics Canada (1999), were created because there is no direct linkage between the characters of a postal code and "rural and small town Canada." It should be noted that researchers in Canada can no longer equate rural with a postal code that contains a second character of "0," as has been done in the past (Wilkins, 1993). This is especially the case for national surveys, because in some provinces all or many of the "0" postal codes have been eliminated. Discussion on the use of postal

codes in health and health human resources research in Canada can be found elsewhere (du Plessis et al., 2001; Ng, Wilkins, & Perras, 1993; Ng, Wilkins, Polek, & Adams, 1997; Pitblado & Pong, 1999).

Mail Survey Procedures

In the interests of anonymity, some nursing associations did not release names and addresses of members to contact for research purposes, while other associations did release members' names and addresses for research purposes with a contract to protect confidentiality. Given contact restraints, a mail questionnaire was deemed to be the best means of treating all provincial and territorial RNs equally.

We used a modification of Dillman's (2000) Tailored Method for the mail survey. The cornerstones of the Dillman method are personalization and persistent follow-up. Full personalization was not possible for some regions, but persistent follow-up by mail was done for all. We did not use a pre-survey letter to encourage response, nor did we use registered mail or telephone follow-up. However, the larger project was announced in provincial and territorial newsletters.

The survey covering letter was printed on the project's letterhead, with the logos of both the University of Saskatchewan and the larger project. It described participation in the survey, why and how the addressee had been selected, the usefulness of the study, and confidentiality of response, as well as expressing appreciation for participation and willingness to answer questions. The letter was signed by hand.

In the case of those provinces and territories that retained survey names and address files, we provided (by courier) sealed mail-out packages to which the association affixed mailing labels. In the case of provinces that supplied name/address files to the research team, personalized letters were generated and inserted in the survey packages. For both survey streams, the initial mail-out packages were signed by both lead authors (NS and CD). The follow-up letter that went to all respondents and the covering letter in the final mail-out package were similarly signed. All other correspondence with participants was signed by one or both of the lead authors.

The survey covering letter contained a telephone number with explicit permission for participants to phone collect if they had any questions or concerns about the study. Early in the data-collection period, it became apparent that many RNs were living in a rural setting and commuting to a large urban centre. To facilitate communication regarding eligibility for the survey, we set up two toll-free telephone lines, one in each official language, and provided e-mail and fax contact information for the survey team. Some 400 nurses contacted the research team concerning the survey.

The survey involved the following mailings: (a) an initial package in a manila envelope, (b) a signed follow-up thank you/reminder letter (2 weeks later), (c) a second package to non-respondents (2 weeks after the follow-up letter), and (d) a third package in a white envelope with coloured attention stickers (1 month after the second replacement package). All questionnaire mail-out packages contained a covering letter, the questionnaire, a self-addressed stamped envelope for returning the completed questionnaire, and a pencil with the name of the study printed on it as a token of appreciation. All mail-out packages had return addresses and were stamped with the correct postage. Both the mail-out envelope and the return envelope had a tracking number so that the team could track response/non-response for future mailings. A tracking database kept a record of all mailings and returns.

Data Management

Returned questionnaires were checked for inclusion criteria. Duplicate returns were deleted, as were returns from ineligible respondents such as nurses who lived in a rural community but worked in an urban setting and nurses who were no longer practising (retired for more than 6 months, on long-term disability, etc.). Eligible questionnaires were entered into a database program and 10% of questionnaires were double-entered to monitor and reduce data-entry error. Inconsistencies between entries for the same case were resolved by checking the original questionnaire. Comments were entered verbatim. French comments were translated into English prior to data entry. A SPSS system file was created for the survey data set. Data editing consisted of frequency runs to check for errant and strange values and logical inconsistencies, which were checked against the original questionnaire and resolved.

Registration-List Issues

During the survey, issues emerged from the nature of the registration lists kept by the nursing associations that could have affected the response rate. Individual nurses can be registered in more than one jurisdiction, and there is no unique identifier for an RN in Canada. In addition, the registration lists contained names of people who had retired, moved out of the country, were on extended disability leave, or had moved from the listed address. This variable quality of the registration files of the provincial and territorial nursing associations from which we derived our sample made it difficult to calculate the response rate. Not all of those to whom we mailed a questionnaire met the inclusion criteria. It was unclear whether non-responders were actual "refusals"; some could have moved and left no forwarding address.

Results

Response Rates

The initial mail-out to the target sample went to 7,065 RNs throughout Canada. There were only 153 explicit refusals. For 1,114 mailings, the address was incorrect, there was duplicate registration, or the RN was deceased. A total of 169 RNs completed the questionnaire but were ineligible because they had retired, were on long-term disability, or lived in a rural area but worked in an urban centre. Correcting for ineligible respondents, address changes, and duplicate registration, we calculated that there were 5,782 eligible respondents. We received 3,933 completed questionnaires, for a response rate of 68% (3,933/5,782).

The response rates by province and territory were generally consistent with the overall rate of 68%: British Columbia 71.3%; Alberta 73.8%; Saskatchewan 80.3%; Manitoba 71.6%; Ontario (French 56.3%, English 68.7%); Quebec (French 67.2%; English 66.7%); New Brunswick (French 65.6%, English 63.2%); Nova Scotia 76.7%; Prince Edward Island 63.8%; Newfoundland 67.6%; Yukon Territory 70.2%; and Northwest and Nunavut territories 57.1%. RNs from the latter territories belong to the same nursing association; their lower response rate was likely related to problems with the association database that became apparent during the study. Data collection took place from October 2001 to July 2002.

Characteristics of Nurses Working in Rural and Remote Settings

The respondents represented all regions of Canada. Table 1 provides an overview of gender and age by region of residence. At the bottom of Table 1, comparisons are made with data from the RNDB (CIHI, 2002). There was considerable variation in the proportions of male and female RNs across the country (see regional pattern in Table 1). On a provincial/territorial basis, the percentage of male RNs ranged from 1.7% in Prince Edward Island to 8.2% in Yukon Territory to 16.4% in Quebec (provincial data are available from the authors on request). In the other provinces and territories the percentage of male RNs ranged from 2.6% to 5.4%. On the national level, 94.8% of the RNs were female (RNDB = 95.2%) and 5.2% male (RNDB = 4.4%).

Table 1 also illustrates an aging RN workforce in rural and remote Canada. The largest groups of RNs were those between the ages of 45 and 54 (34.9%) and between the ages of 35 and 44 (31.9%). Almost 20% were between 25 and 34; 11.7% were 55 or older. Only 1.9% of RNs were under 25 years of age. There was more regional variation in the younger and older ranges than in the middle range, from 35 to 54. For example, in the two westernmost provinces (BC/AB), only 12.1% of

Table 1 *Gender and Age by Region of Residence* (N = *3,933*)

	Gender (*n* = 3,925)[a]						Age (*n* = 3,886)[a]											
	Female		Male		Total		<25		25–34		35–44		45–54		55–64		>64	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Atlantic	1,084	(96.9)	35	(3.1)	1,119	(28.5)	13	(1.2)	210	(18.8)	381	(34.0)	362	(32.3)	137	(12.2)	7	(0.6)
Quebec	315	(83.6)	62	(16.4)	377	(9.6)	12	(3.2)	61	(16.1)	111	(29.4)	143	(37.8)	46	(12.2)	2	(0.5)
Ontario	349	(94.8)	19	(5.2)	368	(9.4)	3	(0.8)	60	(16.3)	102	(27.7)	146	(39.7)	51	(13.9)	2	(0.5)
Territories	425	(94.4)	25	(5.6)	450	(11.5)	3	(0.7)	90	(19.9)	149	(33.0)	148	(32.7)	52	(11.5)	3	(0.7)
Manitoba/ Saskatchewan	795	(96.0)	33	(4.0)	828	(21.1)	4	(0.5)	103	(12.4)	233	(28.1)	322	(38.8)	144	(17.4)	13	(1.6)
Alberta/ British Columbia	754	(96.3)	29	(3.7)	783	(19.9)	11	(1.4)	95	(12.1)	216	(27.5)	304	(38.7)	135	(17.2)	12	(1.5)
Total	3,722	(94.8)	203	(5.2)	3,925	(100.0)	46	(1.2)	619	(15.7)	1,192	(30.3)	1,425	(36.2)	565	(14.4)	39	(1.0)
R/ST RNs[b] %	95.2[c]		4.4				1.9[d]		19.6		31.9		34.9		11.7		0.0	

[a] Does not sum to total sample size due to missing values.
[b] R/ST = rural and small town. The data in this row are from CIHI (2002).
[c] Ibid., p. 73.
[d] Ibid., p. 92, Table 3.0a.

nurses were in the 25-to-34 age range (10.1% in BC alone), compared to 18.8% in the Atlantic provinces (26.7% in Newfoundland). The reverse pattern was found in the 55-to-64 age range, with the four western provinces having the highest proportion (SK/MB 17.4%, BC/AB 17.2%, SK 19.6%). The Atlantic provinces and Quebec had 12.2% of RNs in the 55-to-64 age range, which was the lowest proportion by region (the lowest by province was New Brunswick, at 7.0%). Comparison with the RNDB data (CIHI, 2002) indicates that 16.9% of respondents were under 35 years of age, compared to 21.5% in the population. In the present survey, 15.4% of RNs were over 55, while 11.7% of RNs in the RNDB analysis were in this age group.

The education of rural and remote RNs by region is reported in Table 2. Nurses were asked to describe their educational background in full. Diploma preparation was reported by 79.6% (Territories) to 90.6% (SK/MB) in the six regions of the country (85% in total). Table 2 includes all educational preparation, rather than highest education in nursing as reported in the RNDB analysis for the year 2000 (diploma 81.4% in Canada; CIHI, 2002, p. 69). In the present survey, a diploma was the highest attained nursing education (not including Advanced Practice Nursing certificates) for 72.7% of RNs.

There was considerable regional variation in baccalaureate nursing education, ranging from 17% (SK/MN) to 41% (Territories). The total survey sample with a baccalaureate in nursing was 27% (Table 2), compared to 26% when calculated as the highest education in nursing (RNDB = 18%; CIHI, 2002, p. 69). In addition, 4.5% of RNs had a bachelor's degree in another field. In the Territories there were more RNs with a master's degree in nursing (3.3%) and in non-nursing (3.3%) than in other regions of the country. Advanced practice nursing was most highly represented in the Territories (11.5%), compared to a range from 2.1% (Atlantic) to 8.7% (Ontario) in the provinces.

Overall, the sample was representative of the larger population as indicated by comparison of demographic patterns with the RNDB (CIHI, 2002). This attests to the external validity of the survey and supports generalization of findings.

Reliability of Embedded Scales

The internal consistency reliability was replicated for scales that were embedded in the questionnaire. In the present study, the 11-item Community Satisfaction Scale had a coefficient alpha of .88, compared to .84 in the original study (Henderson-Betkus & MacLeod, 2003). The modified IWS (reduced to five-item subscales) maintained acceptable reliability (compared to other studies reported in Stamps, 1997) for the six subscales used in this study: (1) Pay subscale alpha = .90 (other

Table 2 ***Education by Region of Residence (N = 3,933)***

	Atlantic *n* = 1,119		Quebec *n* = 378		Ontario *n* = 368		Territories *n* = 451		Manitoba / Saskatchewan *n* = 829		Alberta / BC *n* = 784		Total	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Nursing														
Diploma	919	(82.1)	310	(82.0)	318	(86.4)	359	(79.6)	751	(90.6)	683	(87.1)	3,340	(85.0)
Bachelor's	322	(28.8)	87	(23.0)	98	(26.6)	185	(41.0)	141	(17.0)	226	(28.8)	1,059	(27.0)
Master's	13	(1.2)	3	(0.8)	8	(2.2)	15	(3.3)	6	(0.7)	7	(0.9)	52	(1.3)
Advanced Practice Nursing[a]	23	(2.1)	28	(7.4)	32	(8.7)	52	(11.5)	41	(4.9)	57	(7.3)	233	(5.9)
CNA Certification	23	(2.1)			8	(2.2)	11	(2.4)	9	(1.1)	16	(2.0)	67	(1.7)
Outpost Certification	6	(0.5)			19	(5.2)	26	(5.8)	34	(4.1)	20	(2.6)	105	(2.7)
Non-nursing														
Bachelor's	38	(3.4)	26	(6.9)	23	(6.3)	39	(8.6)	26	(3.1)	26	(3.3)	178	(4.5)
Master's	12	(1.1)	9	(2.4)	4	(1.1)	15	(3.3)	5	(0.6)	13	(1.7)	58	(1.5)

Notes: May not sum to total sample size owing to missing values. Education was either completed or in progress.
Nurses with doctoral degrees accounted for .02% of this sample (*n* = 8); 1.1% of nurses (*n* = 44) indicated RPN diploma.
[a] Nurse Practitioner or Clinical Nurse Specialist.

studies = .83 -.88), (2) Autonomy alpha = .66 (other studies = .69 -.76), (3) Organizational Policies alpha = .76 (other studies = .65 -.83), (4) Professional Status alpha = .62 (other studies = .29 -.76), (5) Nurse-Nurse Interaction alpha = .77 (other studies = .71), and (6) Nurse-Physician Interaction alpha = .77 (other studies = .81 -.84). The overall 30-item scale alpha coefficient was .87, consistent with the original range from .82 to .91 reported in previous studies (Stamps).

We included three subscales from the Job Content Questionnaire (Karasek & Theorell, 1990): (1) Psychological Demands (five-item alpha = .76 from present survey), (2) Skill Discretion (six-item alpha = .74), and (3) Decision Authority (three-item alpha = .68). The variable Decision Latitude (Skill Discretion + Decision Authority) had an alpha of .80 and the alpha for the overall Job Strain variable (Psychological Demands/Decision Latitude) was .75. The original alphas (Karasek & Theorell) ranged from .61 to .81.

The current survey alpha for the four-item Perceived Stress Scale was .83, compared to .72 in the original research reported by Cohen et al. (1983). The SF-12 measure of health status had an alpha of .88 in the present study, compared to original alphas of .76 and .77 (Ware et al., 1996). In general, the alphas for the embedded scales are comparable to or better than alphas for these scales in other studies, which attests to the quality of the data.

The replication of internal consistency reliability reported here has been conducted based on the composite survey results from the English and French questionnaires (after translation of French results to English). Further reliability testing, including test-retest reliability, could be conducted on the French questionnaires separate from the English questionnaires.

Primary Work Setting

Table 3 provides data on the work setting of rural and remote nurses. Acute care was the primary work setting with the largest proportion of nurses overall: 39% worked in general hospitals, air ambulance, and dialysis. An additional 5.3% of respondents worked in an integrated facility, which combined acute and long-term care, while 13.7% worked primarily in long-term care, including rehabilitation and nursing homes. The outpost group of nurses (13.5%) worked in a nursing station or nurse clinic with no physician on site. Community-based nurses worked in home care (7.2%) or a community health/public health agency (10.6%). Table 3 outlines the additional work settings of mental health (1.8%), physician's office (1.7%), industry (1.3%), and 2% in settings outside direct care such as education, government, and nursing associations. The "other" category listed includes multiple work settings and

Table 3 ***Primary Work Setting by Region of Residence (N = 3,933)***

	Atlantic *n* = 1,111		Quebec *n* = 376		Ontario *n* = 363		Territories *n* = 449		Manitoba / Saskatchewan *n* = 825		Alberta / BC *n* = 781		Row Total	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
General hospital/ air ambulance/dialysis	510	(45.9)	125	(33.2)	127	(35.0)	186	(41.4)	271	(32.8)	303	(38.8)	1,522	(39.0)
Mental health centre/ corrections/addiction	25	(2.3)	5	(1.3)	6	(1.7)	9	(2.0)	12	(1.5)	14	(1.8)	71	(1.8)
Outpost/nursing station	36	(3.2)	93	(24.7)	81	(22.3)	115	(25.6)	104	(12.6)	98	(12.5)	527	(13.5)
Nursing home/ long-term-care facility	167	(15.0)	53	(14.1)	39	(10.7)	24	(5.3)	144	(17.5)	109	(14.0)	536	(13.7)
Home care	83	(7.5)	16	(4.3)	25	(6.9)	21	(4.7)	67	(8.1)	71	(9.1)	283	(7.2)
Community health agency/ public health	129	(11.6)	25	(6.6)	34	(9.4)	37	(8.2)	79	(9.6)	108	(13.8)	412	(10.6)
Business/private/industry	14	(1.3)	9	(2.4)	6	(1.7)	6	(1.3)	5	(0.6)	10	(1.3)	51	(1.3)
Integrated facility (acute and long-term)	61	(5.5)	21	(5.6)	5	(1.4)	7	(1.6)	86	(10.4)	26	(3.3)	206	(5.3)
Physician's office/ family practice unit	22	(2.0)	2	(0.5)	18	(5.0)	9	(2.0)	10	(1.2)	6	(0.8)	67	(1.7)
Education/association/ government	17	(1.5)	4	(1.1)	8	(2.2)	23	(5.1)	15	(1.8)	10	(1.3)	77	(2.0)
Other	47	(4.2)	23	(6.1)	13	(3.6)	12	(2.7)	32	(3.9)	26	(3.3)	153	(3.9)

Note: May not sum to total sample size owing to missing values.

idiosyncratic settings such as parish nurse, military clinic, regional position, laboratory, disability management, offshore, or not-for-profit organization.

Work Satisfaction

Table 4 presents an overview of work satisfaction for rural and remote nurses, according to their province or territory of residence. Mean scores of overall work satisfaction clustered at the low end for nurses residing in Quebec, New Brunswick, and Newfoundland. In comparison, nurses living in British Columbia and Alberta reported higher mean scores of work satisfaction than nurses living in the other provinces. Approximately 27% to 30% of nurses in Quebec, New Brunswick, and Newfoundland fell below the 20th percentile in the work-satisfaction score, compared with approximately 13.5% in British Columbia and Alberta. Of the six

Table 4 ***Overall Work Satisfaction and Pay Subscale Scores by Province/Territory of Residence (N = 3,933)***

	n[a]	Overall Work Satisfaction[b] *Mean (SD)*	< 20th Percentile (%)	> 80th Percentile (%)	Pay[c] *M (SD)*
NL	319	4.49 (0.70)	27.0	10.0	2.76 (1.41)
PE	163	4.69 (0.68)	17.8	18.4	3.16 (1.33)
NS	338	4.80 (0.71)	16.6	24.6	4.28 (1.47)
NB	250	4.47 (0.72)	28.8	10.4	3.48 (1.38)
QC	362	4.44 (0.67)	30.4	9.4	3.72 (1.39)
ON	350	4.73 (0.80)	21.4	23.4	3.74 (1.54)
MB	377	4.65 (0.74)	22.0	17.2	3.36 (1.53)
SK	427	4.77 (0.72)	16.2	21.8	3.70 (1.53)
AB	411	4.93 (0.73)	13.6	32.8	5.15 (1.35)
BC	350	4.94 (0.73)	13.4	30.3	4.87 (1.45)
YT	160	4.78 (0.84)	19.4	25.0	3.99 (1.64)
NT/NU	267	4.86 (0.75)	15.0	28.1	4.17 (1.51)
Total	3,774	4.72 (0.75)	20.0	20.0	3.92 (1.61)

[a] May not sum to total sample size owing to missing values.
[b] Range: 2–7. Quartiles: 1st 4.23, 2nd 4.77, 3rd 5.23, 4th 7.00.
[c] Range: 1–7. Quartiles: 1st 2.60, 2nd 4.00, 3rd 5.20, 4th 7.00.

subscale components that made up the IWS, analysis of variance indicated that the variations in pay subscale mean scores corresponded most closely to variations in overall work satisfaction. Compared with nurses residing in other provinces, nurses living in Alberta reported significantly higher satisfaction with pay, while Newfoundland nurses reported the lowest satisfaction with pay.

Community Satisfaction

The scores on the 11-item Community Satisfaction Scale are presented in Table 5. Nurses living in Quebec and Nunavut/Northwest Territories had mean scores indicating the lowest community satisfaction. Nurses in Prince Edward Island reported the highest community satisfaction in the country. Approximately 24% to 27% of nurses in Nunavut/Northwest Territories and Quebec fell below the 20th percentile in the community-satisfaction score, compared to 9% in Prince Edward Island.

Table 5 ***Community Satisfaction Scores by Province/Territory of Residence (N = 3,933)***

	n[a]	Community Satisfaction[b] *Mean (SD)*	< 20th Percentile (%)	> 80th Percentile (%)
NL	324	39.6 (7.08)	17.9	19.8
PE	165	42.1 (7.14)	8.5	30.9
NS	343	39.8 (6.85)	15.2	19.5
NB	259	39.1 (7.18)	14.3	14.7
QC	360	37.4 (7.62)	26.7	15.6
ON	353	40.3 (8.04)	17.6	27.2
MB	373	39.1 (8.16)	19.8	20.1
SK	428	39.5 (7.34)	16.4	21.7
AB	411	40.0 (7.69)	15.3	23.4
BC	352	40.0 (7.33)	18.2	24.1
YT	170	39.0 (7.24)	15.3	17.6
NT/NU	275	38.1 (7.54)	23.6	13.8
Total	3,813	39.4 (7.54)	20.0	20.0

[a] May not sum to total sample size owing to missing values.
[b] Range: 11–55. Quartiles: 1st 35.0, 2nd 40.0, 3rd 44.0, 4th 55.0.

Discussion

We have described the methodology and initial results of a unique survey of rural and remote nurses from all provinces and territories in Canada, with data collected in both English and French. The results presented here are a small part of this comprehensive survey, focusing on the demographic characteristics of RNs practising in rural and remote areas, their work settings, and their satisfaction with their worklife and their community. Questionnaire scale-reliability results suggest that the data are of good quality. The content validity process used in the development of the questionnaire provided evidence that the items were relevant to nursing practice in rural and remote Canada.

The survey response rate of 68% was very good for a mailed questionnaire of this type. Many RNs wrote detailed comments in addition to the structured responses. The Dillman (2000) approach, particularly persistent follow-up, made a substantial improvement in the response rate, from under 50% after the initial mailing. The cost of repeated mailings yielded the important benefit of more representative data. Access to the databases of all the nursing associations in the country was important for generalization of findings. However, future survey research and health human resource planning would benefit from a unique identifier for each RN in Canada. In the northern territories in particular, where RNs from other jurisdictions may come to work for periods of time, we had difficulty tracking RNs who had multiple registrations.

Nursing databases in Canada have been developed by the provincial/territorial nursing associations based on the annual registration information gathered when RNs apply for renewal of licensure. The only indicator of "rural" on the current registration forms is the home address. Even though use of the postal code has limitations for sampling, future research would benefit from registration data with postal-code information on primary workplace as an identifier of rural nurses. The data are submitted to CIHI on an annual basis for national publication. In 2002 a special issue of CIHI's annual publication, *Supply and Distribution of Registered Nurses in Rural and Small Town Canada,* was developed by Pitblado and colleagues from the overall project, The Nature of Nursing Practice in Rural and Remote Canada, in consultation with CIHI staff. The rural/urban distinctions in this CIHI report were based on the postal code of residence from the provincial/territorial nursing association data linked to the Statistics Canada definition of "rural and small town Canada" (du Plessis et al., 2001). We recommend that rural/urban indicators such as these be included in future reports at the national level, in the interests of rural research and health human resource planning.

Comparison of the survey sample data (2001–02) with the RNDB population data of RNs who registered in 2000 (CIHI, 2002) revealed that the survey was representative of RNs in rural and small-town Canada. While there are some differences in numbers (e.g., the survey sample was slightly older), the basic demographic and work profiles were similar; they illustrate the same themes (e.g., an aging workforce). No comparable data are available from CIHI for RNs registered in 2002 because the rural and small-town distinction was not made in the report for that year (CIHI, 2003).

The higher proportion of survey RNs with a baccalaureate in nursing can be attributed to the over-sampling of "remote" RNs, which was done because the numbers of RNs in the territories and outpost settings are relatively small. In the survey, 41.0% of rural RNs from the territories had a baccalaureate in nursing, compared to 17.0% to 28.8% in other regions. A similar pattern is evident in the RNDB analysis (CIHI, 2002, p. 46). While 23.8% of urban nurses Canada-wide had a nursing baccalaureate, compared to 18.0% of rural nurses, and most provinces were in the same direction (urban>rural), the pattern was reversed (rural> urban) in New Brunswick and the territories. The need for more education was a theme in the open-ended comments from survey participants, particularly those in remote settings. In the documentary analysis for the larger project (Kulig et al., 2003), we found that education should be more closely matched with the nature of nursing practice in these areas.

The primary work settings of RNs varied. The largest proportion of rural RNs worked in institutions: acute care (39.0%), long-term care (13.7%), and integrated facilities (which combine acute and long-term care) (5.3%). Another 18.8% worked in the community: home care (7.2%) and public health (10.6%). In remote areas, 13.5% of RNs worked in an outpost or nursing station where advanced practice nursing is required. However, only 8.6% of the sample had specific education for advanced practice nursing or outpost certification. The categorization of work settings is somewhat imprecise because there is some regional variation in labels (e.g., integrated facilities do not exist in every province/territory) and some settings could be community-based or institution-based (e.g., mental health). Comparison with the RNDB (CIHI, 2002, p. 48) again revealed that the survey had a representative sample. In 2000, there were 60.9% of rural nurses working in hospitals, 16.3% in long-term care, 4.9% in home care, and 12.7% in community health. Only 1.0% of RNs were in outpost settings, which was the basis for our decision to over-sample this group in the survey, to elicit meaningful data from remote nurses in order to guide policy development (Kulig, Nahachewsky, Thomlinson, MacLeod, & Curran, 2004).

Average satisfaction levels for both work and community were on the positive side of the scales. In the case of work satisfaction, the national mean of 4.72 is just under 5, which represents the descriptor for "mildly agree" on the seven-point scale. Regional comparisons are consistent with a range of means, from 4.44 (Quebec) to 4.93 (Alberta). A subsequent analysis at the subscale level revealed that most variability could be accounted for by the "pay" subscale, with nine provinces falling below the neutral midpoint of 4 in the dissatisfaction end of the subscale. The highest satisfaction with pay was found, not surprisingly, in the provinces with the highest pay scales (Alberta and British Columbia). Although there is a growing literature on job satisfaction, there is much variability in measurement, so it is difficult to compare results across rural settings and between rural and urban settings. However, a study from the United States that used the earlier version of the IWS (Coward et al., 1995) found no differences in job satisfaction between rural and urban nurses in long-term-care settings. An Australian study that demonstrated a relationship between job satisfaction (measured by the IWS) and intention to stay in nursing (Cowin, 2002) found that professional status was the most important aspect of job satisfaction overall, and pay was important to young nurses who were making the transition from student to registered nurse, but not to experienced nurses.

In terms of community satisfaction, the results presented here are comparable to those of a study with public health nurses in British Columbia (Henderson-Betkus & MacLeod, 2003). The reported scores represented a moderate level of community satisfaction.

In conclusion, the method for sampling rural RNs and the survey design yielding a 68% response rate contribute to a national survey data set with high external validity that can be used for evidence-based decision-making and policy development related to nursing practice in rural and remote settings in all regions of Canada. The questionnaire that was developed in English and French has satisfactory content validity and internal consistency reliability of embedded scales.

The profile of rural and remote RNs confirms that this is an aging group and health human resource plans are needed to recruit younger nurses in order to ensure sustainability of the workforce. Educational initiatives should target the specific needs of nurses working in a variety of rural and remote settings. Although these nurses report some satisfaction with both work and community, overall satisfaction levels could be raised if specific improvements were made, particularly in the area of educational and interdisciplinary support for practice. In the present analysis, pay was identified as a significant contributor to work satisfaction. Subsequent reports will focus on a variety of issues that could inform policy for rural and remote nurses.

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