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Résumé

L'intégration des infirmières praticiennes dans le système des soins primaires en Ontario : étude des variantes selon les milieux de travail

Irene Koren, Oxana Mian, Ellen Rukholm

Le Centre de recherche en santé dans les milieux ruraux et du Nord mène, pour le compte du ministère ontarien de la Santé et des Soins de longue durée, des enquêtes annuelles de suivi sur les infirmières praticiennes en soins de santé primaires (IP SSP), dans le but de dresser un portrait de la profession et de l'emploi en ce domaine. Les résultats de l'enquête la plus récente, menée en 2008, sont présentés par les auteures. L'échantillon comprenait 378 IP inscrites en Ontario cette année-là et actives dans le secteur des soins primaires. On a analysé les différences entre les milieux de soins sur le plan démographique, de l'emploi et de l'exercice. On a constaté que la répartition géographique, l'éducation, le degré d'autonomie et le profil d'exercice variaient d'un milieu à l'autre. Les données brossent un tableau de l'intégration des IP au sein du système de santé en Ontario et confirment la nécessité de continuer à décrire les modèles d'exercice et leurs effets sur les résultats en matière de soins primaires.

Mots clés : infirmière praticienne, soins de santé primaires, enquête, Ontario

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Integration of Nurse Practitioners Into Ontario's Primary Health Care System: Variations Across Practice Settings

Irene Koren, Oxana Mian, Ellen Rukholm

Annual tracking surveys of nurse practitioners in the Canadian province of Ontario conducted by the Centre for Rural and Northern Health Research for the Ministry of Health and Long-Term Care provide a picture of current employment and practice. The authors present an update on the most recent survey of primary health care nurse practitioners (PHC NPs), conducted in 2008. The study sample consisted of 378 NPs registered in Ontario in 2008 and practising in PHC. Differences in demographic, employment, and practice characteristics in a variety of practice settings are explored. Geographic distribution, education, autonomy of the NP, and the practice profiles varied across settings. The findings document the integration of NPs into Ontario's health-care system and suggest a need to further describe the models of practice and their impact on PHC outcomes.

Keywords: nurse practitioner, primary health care, survey, Ontario

Nurse practitioners (NPs) are considered advanced practice nurses, an umbrella term defined internationally as registered nurses (RNs) who have acquired the expert knowledge base, complex decision-making skills, and clinical competencies for expanded practice (International Council of Nurses, 2008). In Canada, nursing regulatory bodies at the provincial/territorial level are responsible for setting the requirements for competency to practise and for licensing NPs, identifying the standards of practice, and approving NP education programs. A graduate degree in nursing is considered essential for this advanced practice role (Canadian Nurses Association [CNA], 2009). In the province of Ontario, amendments to legislation regulating NP practice in 2007 resulted in protection of the NP title and designation of three areas of specialization: Adult, Pediatric, and Primary Health Care (College of Nurses of Ontario [CNO], 2007).

For more than a decade, the Centre for Rural and Northern Health Research (CRaNHR) has been conducting tracking studies of NPs in Ontario for the Ministry of Health and Long-Term Care (MOHLTC) and the Council of Ontario University Programs in Nursing (COUPN). Collectively these studies document the integration of NPs into the

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health-care system, illustrating career paths, practice profiles, and barriers to practice (Caty, Michel, Pong, & Stewart, 2000; Hurlock-Chorostecki, van Soeren, & Goodwin, 2008; van Soeren, Hurlock-Chorostecki, Goodwin, & Baker, 2009). A limitation of existing studies is the lack of detail in the description of NP practice (Pulcini, Jelic, Gul, & Loke, 2010; RCN Nurse Practitioners Association [RCN], 2006). In this article we present findings from a survey of Ontario NPs holding primary health care (PHC) certification. The survey was conducted in 2008 as part of CRaNHR's annual tracking study commissioned by the Nursing Secretariat of MOHLTC. NP practice across PHC settings is explored to establish a more complete understanding of NP integration into the health-care system.

The number of PHC NPs in Ontario is increasing and notable changes are occurring in the distribution of NPs across PHC settings. In 2005, the College of Nurses of Ontario (CNO) reported 594 NPs registered and practising in the province, with 425 (71.5%) of these indicating their position as a PHC NP (CNO, 2005). By 2008 there were 868 NPs registered and practising in Ontario, with 710 (81.8%) practising in PHC (CNO, 2008). Over this time frame, family health teams (FHTs) and NP-led clinics were implemented as new models of health-care delivery in Ontario. These new models were designed to improve access to PHC and reduce the number of patients without a health-care provider. In both models, a variety of health professionals work collaboratively to deliver health services with a focus on chronic disease management, disease prevention, and health promotion. Since 2005, 150 FHTs have been created across the province, with 50 more planned (MOHLTC, 2009a). Findings from the 2008 CRaNHR tracking study indicate that 30% of all PHC NPs in Ontario work in FHTs (Mian, Koren, & Pong, 2009), compared to 4% in 2005 (van Soeren et al., 2009). The first NP-led clinic was opened in 2007 in Northern Ontario (Sudbury) and in November 2007 the Government of Ontario committed to establishing 25 new NP-led clinics. Eleven NP-led clinics were announced in 2009 and an additional 14 are anticipated to be fully operational by 2012 (MOHLTC, 2009b).

A second notable change is the proportion of PHC NPs who identified their employer as "other," which increased from 18% to 25% over a 3-year span (CNO, 2005, 2008). This category includes practice settings that have not traditionally hired NPs, such as emergency departments, long-term-care facilities, and public health units (DiCenso et al., 2007; Donald et al., 2009). At the same time, the proportion of NPs employed in community health centres (CHCs), a practice setting that has traditionally hired NPs, has decreased from 38% to 30% (CNO, 2005, 2008). CHCs, which were introduced in Ontario in the 1970s as a multidisci-

plinary model of PHC, offer programs and services that address social and environmental problems affecting the health of the communities they serve (MOHLTC, 2006).

The purpose of this article is to explore differences in education, employment, interprofessional collaboration, and other practice characteristics of NPs working in PHC practice settings in Ontario. Theoretically, practice setting is defined by the influences of practice context (e.g., geographical location, whether urban or rural, organizational structure, and institutional affiliations) and organization of practice (e.g., characteristics of team members, such as age, education, skill mix, and ability to participate in decision-making) (Hogg, Rowan, Russell, Geneau, & Muldoon, 2008). The context and organization of a practice setting affect NP role implementation and integration into the health-care system (DiCenso et al., 2007). In this article special attention is paid to the characteristics of PHC NP practice in recently implemented health-care delivery models in comparison to practice characteristics in "traditional" and "non-traditional" settings.

Method

This is the third survey of PHC NPs in Ontario as part of the NP Workforce Multi-Year Tracking Study. The questionnaire was developed by the CRaNHR researchers in consultation with the Nursing Secretariat and with input from other nursing stakeholders. In addition to core questions asked annually, the 2008 survey included questions about the PHC NP's collaborative relationship with other health-care providers, barriers to practice, and retirement plans. A pilot test of the draft instrument was conducted with several practising NPs for content validity and readability. The final questionnaire comprised 70 questions that covered demographic information, educational background, practice preparation, employment (employment status, type of remuneration, funding, income, union membership, last salary increase, and satisfaction with salary), practice location, and practice profile (population served, type of practice, work hours, time spent on different tasks, and collaboration with other health professionals). Approval for the study was secured from Laurentian University's Research Ethics Board.

The target population included NPs registered in Ontario in the Extended Class practising as PHC NPs. Home addresses were obtained from the CNO for 733 NPs (out of a possible 868 registered NPs, or 85%) who indicated on their 2008 annual registration that they were interested in participating in research. A modified Dillman approach (Dillman, 2007) was used to collect the data. The study package, containing a covering letter, consent form, business reply envelope, and ques-

tionnaire, was sent at 3-week intervals. Questionnaires were tracked; second and third mailings of study packages were sent to those PHC NPs who had not returned a questionnaire prior to the start of the next mailing. Data collection began in September and continued until December 2008.

Data analysis was performed using the Statistical Package for Social Sciences, version 17.0. The analysis was based on frequency tables for categorical and nominal data and descriptive statistics for continuous data. To compare PHC NP characteristics across practice settings, contingency tables and chi-square statistics were generated for categorical data, and a one-way analysis of variance along with tests for multiple comparisons was used for continuous data.

Results

Of the 733 NPs who were contacted, 504 returned the questionnaire, for a response rate of 68.8%. Questionnaires from respondents who were not PHC NPs ($n = 73$) or that did not indicate registration class ($n = 12$) and those that arrived after the data entry cut-off date ($n = 41$) were excluded from the analysis. This left 378 questionnaires suitable for analysis. This sample represented 53% of all PHC NPs ($n = 710$) registered and practising in Ontario (CNO, 2008, p. 33).

Demographic and Educational Characteristics

The average age of respondents (45.6 years) was similar to the average age reported for Ontario PHC NPs (45.5 years). There was a slightly larger proportion of females in the study sample (96.6%) than in the target population (95.2%) (Table 1; CNO, 2008). On average, NPs working in NP-led clinics were 2 years older and NPs working in physician offices were 1 year younger than all respondents, but this difference was not statistically significant. About 70% of respondents reported a COUPN certificate or equivalent as the highest level of nursing education obtained and 22% reported having a master's degree in nursing. A larger proportion of PHC NPs working in hospitals held a master's degree (28%) as compared to NPs in all other practice settings (Table 1). The difference did not reach the significance level ($p < 0.05$).

Geographic Distribution and Practice Settings

The respondents practised in all 14 Local Health Integration Network (LHIN) regions of Ontario. The geographic distribution of their practices approximated that of the target population (Figure 1, chart 1). The sample overrepresented PHC NPs in the Toronto Central LHIN and underrepresented PHC NPs in the Hamilton, Niagara, Haldimand

Table 1 *PHC NPs' Demographic, Education, and Employment Characteristics, by Practice Setting*

	Practice setting							
	CHC (*n* = 121)	**Physician's office (*n* = 87)**	**Hospital (*n* = 47)**	**Other[a] (*n* = 55)**	**FHT (*n* = 56)**	**NP-led clinic (*n* = 12)**	**All (*N* = 378)**	***P* value**
Age[b] (years)	45.5 (8.4)	44.7 (8.3)	45.3 (8.0)	46.8 (9.1)	45.8 (8.1)	47.9 (7.0)	**45.6 (8.4)**	0.69
Gender	94.2	††	††	98.2	100.0	100.0	**96.6**	0.42
Master's in Nursing (%)	20.7	19.5	27.7	23.6	21.4	†	**22.0**	0.34
Experience[b] (years)								
As an RN	16.3 (8.9)	16.5 (9.4)	18.9 (8.1)	17.4 (9.0)	17.2 (8.4)	18.5(7.7)	**17.0 (8.8)**	> 0.05
As an NP	6.8 (4.9)**	5.2 (3.9)	4.2 (3.4)**	6.2 (4.2)	5.8 (4.7)	6.4 (4.2)	**5.9 (4.4)**	< 0.05**
In current position	5.5 (5.0)**	3.3 (4.0)**	3.4 (2.8)**	4.6 (3.8)	2.3 (1.7)**	3.7 (3.1)	**4.1 (4.1)**	< 0.05**
Employment status (%)*								0.01
Full-time	71.2	83.9	95.6	81.8	91.1	70.0	**81.7**	
Part-time	25.4	11.5	†	12.7	†	†	**14.8**	
Other	3.4	4.6	††	5.5	††	††	**3.5**	
Unionized position (%)*	14.0	8.0	53.2	45.5	†	†	**20.9**	0.00
Funding (%)*								0.00
MOHLTC direct funding	46.3	31.0	†	7.3	25.0	50.0	**29.1**	
MOHLTC through employer	38.0	58.6	74.5	61.8	66.1	†	**54.8**	
Other	15.7	10.4	††	30.9	8.9	††	**16.1**	

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Table 1 *(cont'd)*

	CHC (n = 121)	Physician's office (n = 87)	Hospital (n = 47)	Other[a] (n = 55)	FHT (n = 56)	NP-led clinic (n = 12)	All (N = 378)	P value
Remuneration (%)*								0.00
Salary	81.0	74.7	††	63.6	82.1	75.0	**72.0**	
Hourly rate	††	††	59.6	32.0	††	†	**26.2**	
Other	†	†	†	4.4	†	††	**1.8**	
Last salary increase (%)*								0.00
In 2007–08	65.2	74.7	87.2	74.5	75.0	58.3	**72.8**	
Annual gross income (%)*								
(full-time, n = 300)								0.02
$60,000–80,000	6.0	5.6	7.1	6.8	2.0	14.3	**5.7**	
$80,001–100,000	91.7	86.1	71.4	86.4	96.1	71.4	**87.0**	
$100,001 or more	2.4	8.3	21.4	6.8	2.0	14.3	**7.3**	
Satisfied with salary (%)*	47.9	60.5	76.6	63.6	42.9	58.3	**56.1**	0.00

[a] "Other" practice settings include other community clinics (including mental health clinics, university or college health services, maternity clinics, etc.), Aboriginal health access centres, nursing stations/outpost clinics, public health units, long-term-care facilities, health-service organizations, and military.

[b] *Mean (SD)* values given for age and years of experience.

★ Significant differences across practice settings at $p < 0.05$.

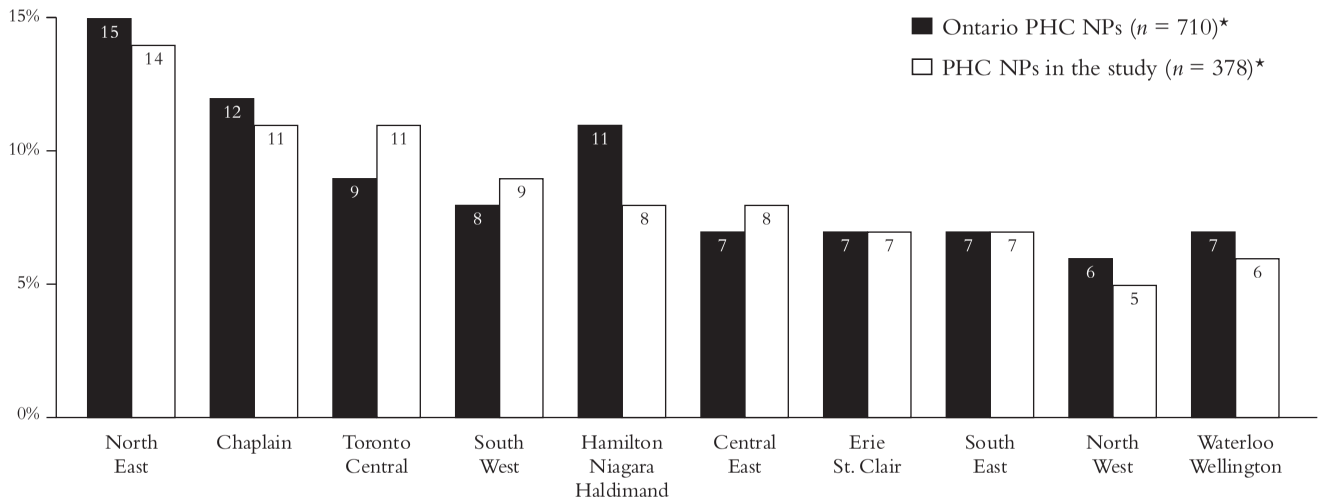
★★ P value for multiple pair-wise comparisons that indicated statistically significant differences between values.

† Values suppressed due to low counts (less than 5).

†† Values next to the small counts are not reported, to ensure that the suppressed values cannot be derived. Suppression of values was not applied to grouped categories (e.g., other practice settings) or grouped values (e.g., last salary increase and annual gross income).

Figure 1 ***Geographical Distribution of PHC NPs and Their Practices in Ontario***

Chart 1 **Distribution across LHIN regions**



* College of Nurses of Ontario (2008, p. 33).

Note: Due to small numbers, data are not shown for Central West, Central, Mississauga Halton, and North Simcoe Muskoka LHIN regions and "not specified LHIN" category ($n = 2$ for Ontario PHC NPs and $n = 20$ for this study).

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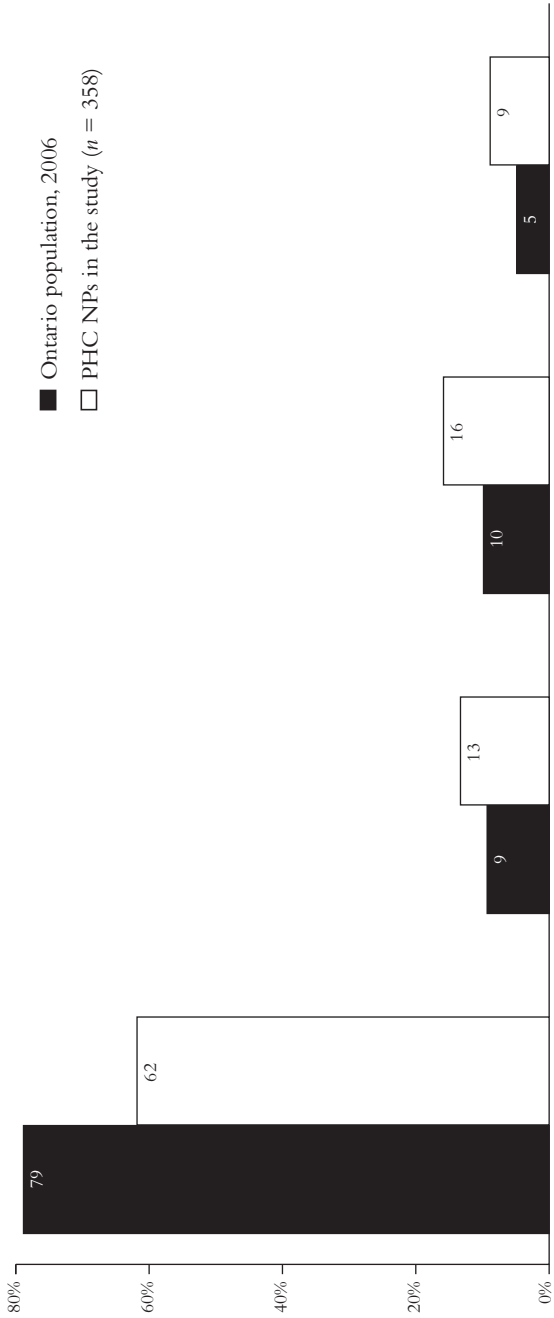
Chart 2 **Distribution in urban and rural areas**



Note: "Large cities" include urban areas with core populations of 100,000 or more and include all neighbouring municipalities where 50% or more of the employed population commute to the urban core. "Small cities" include urban areas with core populations from 10,000 to 99,999 and include all neighbouring municipalities where 50% or more of the employed population commute to the urban core. "Towns" include municipalities with population under 10,000 in which 5% to 49% of the employed population commute to work in an urban core. "Rural and remote" include municipalities with population under 10,000 in which less than 5% commute to work in an urban core.

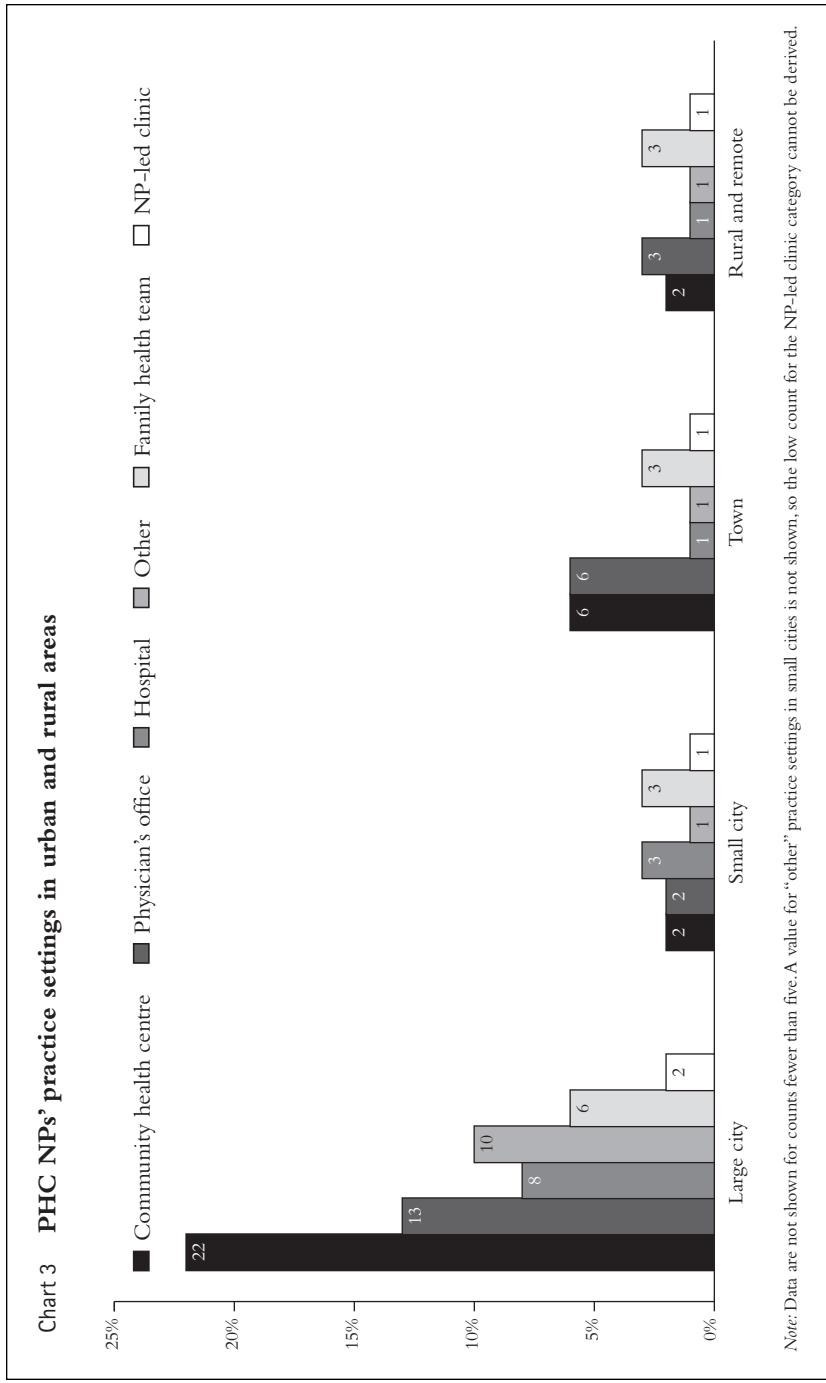


Chart 3 PHC NPs' practice settings in urban and rural areas
Community health centre
Physician's office
Hospital
Other
Family health team
NP-led clinic
25%
20%
15%
10%
5%
0%
22
13
8
10
6
2
2
2
3
1
3
1
6
6
1
1
3
1
2
3
1
1
1
Large city
Small city
Town
Rural and remote
Note: Data are not shown for counts fewer than five. A value for "other" practice settings in small cities is not shown, so the low count for the NP-led clinic category cannot be derived.

LHIN, but this difference was not statistically significant ($p = 0.99$). As with PHC NPs in the province, the largest percentage of respondents (14%) practised in the North East LHIN, a large geographical area (almost a third of the province's area) with a low population density. The major urban centre in the North East LHIN is the City of Greater Sudbury (population approximately 157,000). The next largest proportion of respondents practised in the Champlain (11%) and Toronto Central (11%) LHINs. The Champlain LHIN is situated in the eastern part of the province and the population is highly concentrated in the Ottawa area (approximately 774,000, or 70% of the total LHIN population). Toronto Central LHIN is home to 1,146,800 people, or 44% of the population of the City of Toronto (MOHLTC, 2009c).

Nearly 40% of PHC NP respondents worked in small cities, towns, and rural or remote areas, where 20% of Ontario's population lives (Figure 1, chart 2). PHC NPs worked in six main practice settings — that is, CHCs (32%), physicians' offices (23%), FHTs (15%), hospitals (12%), NP-led clinics (3%), and other practice settings (15%), which included mental health clinics, Aboriginal health access centres, nursing stations, university or college health services, long-term-care facilities, public health units, health services organizations, and military combined into one group due to the small number of respondents in each category. In large cities, the majority of PHC NPs worked in CHCs and physicians' offices. Almost half of all PHC NPs in small cities worked in hospitals and FHTs. In towns, most PHC NPs worked in CHCs and physicians' offices, whereas in rural and remote areas most worked in physicians' offices and FHTs (Figure 1, chart 3).

Employment, Remuneration, and Satisfaction With Salary

On average, the surveyed PHC NPs had 17.0 ($SD = 8.8$) years of experience as RNs, 5.9 ($SD = 4.4$) as NPs, and worked 4.1 ($SD = 4.1$) years in their current PHC NP position (Table 1). NPs working in CHCs had more years of NP experience than NPs working in hospitals (6.8 vs. 4.2 years; $p = 0.02$). NPs working in CHCs worked in their current position on average close to 6 years, which was significantly longer than those working in FHTs (2 years; $p = 0.00$), physicians' offices (3 years; $p = 0.00$), and hospitals (3 years; $p = 0.02$). Overall, 82% were employed full-time, 15% were employed part-time, and about 3% were self-employed or employed casually. In terms of employment status, 96% of PHC NPs in hospitals worked full-time and the largest proportion (25%) of NPs working part-time worked in CHCs (Table 1). About 20% of respondents were in unionized positions. More than half (53%) of PHC NPs working in hospitals were unionized, compared to 14% in CHCs and less than 10% in physicians' offices, FHTs, and NP-led clinics ($p = 0.0$).

Significant differences were found in NP funding, remuneration, annual gross income, and salary satisfaction when compared across practice settings (Table 1). Eighty-four percent indicated that their main practice was funded by the MOHLTC and 16% indicated other sources of funding (e.g., federal government, physician, municipality). The largest proportion of NP positions funded by the MOHLTC directly was in NP-led clinics (50%). The largest proportion of NP positions funded by the MOHLTC through employers was in hospitals (75%). Most respondents (72%) received a salary. Significantly larger proportions of salaried NP positions were in CHCs and FHTs (81% and 82%; $p = 0.0$) compared to other practice settings. A significantly larger proportion of NPs (60%) in hospitals were paid an hourly rate ($p = 0.00$).

Almost three quarters (73%) of respondents across all practice settings received a salary increase in 2007–08. The proportion was significantly larger ($p = 0.00$) in hospitals (87%) than in NP-led clinics (58%) and CHCs (65%). Of all respondents working full-time, only 6% earned less than $80,000 and about 90% earned between $80,001 and $100,000. About one fifth (21%) of PHC NPs working in hospitals received $100,001 or more, compared to about 2% working in CHCs and FHTs and less than 10% working in physicians' offices and other practice settings ($p = 0.02$). Almost 80% of respondents working in hospitals were satisfied with their salary, compared to 43% of NPs working in FHTs and 48% in CHCs ($p = 0.00$). Among the most valued employment incentives, PHC NPs listed higher salaries and salary increases in line with the cost of living; financial support for continuing education and professional development; and better non-financial benefits, including extended health benefits, dental and drug plans, pension plan, and disability insurance coverage (data not shown). No differences were found in respondent ranking of employment incentives across practice settings.

Clientele and Practice Profile

The majority of PHC NPs reported seeing a "typical family practice clientele" (74%) and low-income earners (62%). About half of all respondents cared for clients who were unemployed (50%) or substance users (46%). More than a third saw clients with permanent physical disabilities (37%) or clients from cultural minorities (36%). About a third or less saw clients who were recent immigrants (29%), Aboriginal (28%), transient/seasonal (20%), or homeless (18%).

PHC NP clientele differed significantly from one practice setting to another ($p < 0.05$). Almost 100% of NPs in physicians' offices (99%) and NPs in FHTs (93%) cared for "typical family practice clientele," whereas only 47% of hospital NPs saw "typical family practice clientele" in their daily practice. The majority of NPs in CHCs (77%) and FHTs (66%) had

low-income earners as their clients, whereas less than half of NPs in physicians' offices (47%) cared for this group of clients ($p = 0.00$). Almost two thirds of NPs in CHCs and 50% in NP-led clinics cared for the unemployed population, in comparison to 35% in physicians' offices. Fifty-five percent of NPs in CHCs had cultural minorities and 50% had immigrants among their clients. This was a significantly larger proportion ($p = 0.00$) compared to NPs working in any other practice setting. The homeless population was among the PHC NP clientele in CHCs (30%) and hospitals (25%) but rarely in physicians' offices or FHTs.

Table 2 describes PHC NP practice characteristics in different settings. In terms of age groups, PHC NP clientele was composed of 43% adults, 25% seniors, 16% children and infants, and 14% adolescents, on average. The PHC NPs in CHCs had a larger proportion (40%) of infants, children, and adolescents (0–18 years) and PHC NPs in hospitals, NP-led clinics, and other practice settings had a larger proportion (33–35%) of seniors (65+ years) among their clientele. No differences were found across practice settings in terms of the proportion of adults (19–64 years) among NP clientele.

NPs working in FHTs spent more time on direct patient care (81%) compared to other practice settings (71%; $p = 0.03$). Those working in NP-led clinics spent more than twice as much time on nursing administration, including budgeting, hiring, and health-services planning, compared to NPs in any other practice setting (p value for multiple pair-wise comparisons ranged from 0.02 to 0.04).

Almost a third of PHC NPs' time was devoted to treatment of minor illnesses, 25% was spent on chronic disease management, and 22% on health promotion and disease prevention. PHC NPs working in CHCs, FHTs, and NP-led clinics spent more of their time (24–26%) on health promotion/disease prevention activities compared to PHC NPs working in hospitals (16%). The difference was statistically significant for CHCs and hospitals ($p = 0.005$) and CHCs and FHTs ($p = 0.03$). Time spent on counselling was significantly greater for NPs in CHCs (17%) compared to hospital NPs (10%) ($p = 0.003$). NPs estimated that they could not order more than 30% of the drugs and about a quarter of the laboratory and diagnostic tests that they judged their clients needed as these were not on the current lists that set limits on the prescriptive and diagnostic authority of NPs in the province. The percentage of needed drugs not on the list was significantly higher for NPs working in hospitals (41%) and physicians' offices (39%) compared to NPs in CHCs (27%) and FHTs (28%); $p = 0.003$ for pair-wise comparison between CHCs and hospitals ($p = 0.003$), for CHCs and physicians' offices ($p = 0.001$), and for hospitals and FHTs ($p = 0.046$).

Table 2 *PHC NPs' Practice Profile, by Practice Setting*

	Practice setting							
	CHC (*n* = 121)	**Physician's office (*n* = 87)**	**Hospital (*n* = 47)**	**Other[a] (*n* = 55)**	**FHT (*n* = 56)**	**NP-led clinic (*n* = 12)**	**All (*N* = 378)**	***P* value**
Percentage of clients in the age group								
Infants/children (0–12 years)*	23.0	16.7	7.7	8.5	15.4	16.3	**16.2**	0.00
Adolescents (13–18 years)*	17.2	13.6	6.7	15.6	12.1	11.5	**13.9**	0.00
Adults (19–64 years)	42.6	43.3	48.1	38.4	42.5	38.8	**42.7**	0.43
Seniors (65+ years)*	16.9	25.2	35.4	33.2	22.6	33.2	**24.6**	0.00
Estimated percentage of time spent on activities								
Direct patient care	77.0	78.8	75.5	71.4**	80.5**	71.3	**76.8**	< 0.05**
Nursing administration	5.4	4.8	5.2	5.3	4.9	12.9**	**5.4**	< 0.05**
Research/scholarly work/ teaching	7.9	8.0	10.2	11.2	7.7	10.2	**8.8**	> 0.05
Non-nursing tasks	6.1	5.6	8.3**	6.6	3.4**	5.6	**5.9**	< 0.05**
Estimated percentage of time spent on activities								
Health promotion/disease prevention	24.4**	22.2	15.8**	19.6	24.3**	25.6	**22.1**	< 0.05**
Treatment	29.5	33.3	31.1	32.0	28.3	26.3	**30.6**	> 0.05
Chronic disease management	21.4**	24.5	31.9**	19.8**	30.3	30.6	**24.8**	< 0.05**

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Table 2 *(cont'd)*

	CHC (n = 121)	Physician's office (n = 87)	Hospital (n = 47)	Other[a] (n = 55)	FHT (n = 56)	NP-led clinic (n = 12)	All (N = 378)	P value
***Estimated percentage of time spent on activities** (cont'd)*								
Palliative care	0.8	1.2	0.9	3.1**	0.9	0.3	**1.3**	< 0.05**
Counselling	16.9**	14.5	9.7	15.3	12.8	13.3	**14.5**	< 0.05**
Advocacy	5.0	3.2	4.1	5.2	2.5	4.0	**4.1**	> 0.05
Drugs needed that are not on drug schedule (%)	26.5**	38.7**	40.7**	30.7	28.2**	33.6	**32.1**	< 0.05**
Number of collaborating physicians	3.5**	5.1	6.2**	3.7	5.1	1.5**	**4.4**	< 0.05**
Proportion of NPs with collaborating physician								
On-site	62.8	67.8	71.7	17.0	††	†	**54.5**	
Off-site	5.0	†	†	28.3	†	50.0	**9.6**	
Both or other	32.3	††	††	54.7	49.1	††	**35.8**	

[a] "Other" practice settings include community clinics (including mental health clinics, university or college health services, maternity clinics, etc.), Aboriginal health access centres, nursing station/outpost clinics, public health units, long-term-care facilities, health-service organizations, and military.

★ Significant differences across practice settings at $p < 0.05$.

★★ P value for multiple pair-wise comparisons that indicated statistically significant differences between values.

† Values suppressed due to low counts (less than 5).

†† Values next to the small counts are not reported, to ensure that the suppressed values cannot be derived.

Significant differences were found across practice settings in NP work hours, appointments, on-call responsibilities, and home visiting. PHC NPs worked 35–36 hours per week. Respondents in hospitals and FHTs worked the longest hours (40–41 hours per week). This was significantly more than NPs in CHCs, who worked 30–31 hours per week, and NPs in other practice settings, who worked 32–33 hours per week ($p = 0.00$). The respondents estimated that they had 13 (*range* = 2–30) face-to-face appointments and five (*range* = 1–35) telephone consultations in a typical day. PHC NPs in physicians' offices had more appointments than NPs in CHCs (14 vs. 11; $p = 0.00$). About a third worked in multiple locations (three locations, on average). A significantly larger proportion of PHC NPs in NP-led clinics (83%; $p = 0.00$) worked at multiple sites, compared to NPs in FHTs (42%), CHCs and physicians' offices (about 30%), and hospitals (15%). Overall, 13% of PHC NPs had on-call responsibilities. The proportion differed significantly across practice settings, with 22% of PHC NPs in CHCs, 15% in other practice settings, 10% in FHTs, 9% in hospitals, 4% in physicians' offices, and 0% in NP-led clinics having on-call responsibilities ($p = 0.02$). Forty-three percent of all NPs surveyed made home visits. The proportion of NPs making home visits differed significantly across practice settings ($p = 0.00$). A larger proportion was found among NPs in CHCs (55%), FHTs (53%), physicians' offices (46%), and NP-led clinics (42%), compared to NPs in other practice settings (35%) and hospitals (6%).

Interprofessional Collaboration

On average, the respondents collaborated with about four physicians in their practice (the number ranged from 0 to 30). The majority of NPs in hospitals (72%), physicians' offices (68%), and CHCs (63%) had physicians working on-site (Table 2). Seventy-five percent had worked with their main collaborating physician for 5 years or less and 87% spent less than 2 hours per week consulting with them. Regardless of the average time spent on consultations, 85% thought that they usually had sufficient consultation time. A high percentage of the respondents agreed that their main collaborating physician — that is, the physician with whom they worked most often — understood the NP role (87%) and supported them to work to their full scope of practice (93%). Most (92%) reported that the collaborative relationship had improved with time and more than 75% reported a high degree of or total satisfaction with the collaborative relationship. No differences were found in this regard across practice settings. Nearly half (43%) of the PHC NPs reported that relationships with physicians outside their practice "needed work." This proportion was significantly larger among NPs in CHCs (60%) and NP-led clinics (58%),

in comparison to NPs in hospitals (44%) and physicians' offices (45%) ($p = 0.02$).

PHC NPs provided care for 80% of their clients autonomously or with minimum consultation. However, NPs across settings ranked importance of "enabling NPs to work autonomously and to full scope of practice" differently: 42% of NPs working in hospitals and NP-led clinics ranked this as "the most important to improve," compared to 20% of NPs in FHTs ($p = 0.02$). No differences were found across practice settings in NP ranking of the importance of "increasing mutual respect, trust and communication between members of different professions" and "building inter-professional awareness and understanding of each profession's role."

Discussion

An understanding of the context and organization of practice settings (Hogg et al., 2008) is important to the integration of the NP role into the health-care system (DiCenso et al., 2007). Sidani, Irvine, and DiCenso (2000) examined the implementation of the PHC NP role in Ontario shortly after the government passed the *Expanded Nursing Services Act* enabling NP practice in the province. They report overall satisfaction among NPs with their role, although NPs frequently cited concerns about inadequate remuneration, heavy workload, and lack of public awareness of the NP role. At the time of the survey, most PHC NPs were practising in CHCs and their practice profile in relation to client characteristics and services provided by the NP was described as consistent with expectations (Sidani et al., 2000). The present study informs progress in the implementation of the PHC NP role by detailing NP practice in a variety of PHC settings with respect to education, location of practice, practice profiles, and interprofessional collaboration.

The findings of this study reveal differences in the highest level of nursing education attained by PHC NPs across practice settings. In Ontario, the required education for PHC NPs is at the post-baccalaureate level, unlike most jurisdictions in Canada and internationally, where the education standard is a master's degree. Of note is the increase in the number of PHC NPs with a master's degree in nursing, as compared to the 2005 NP workforce study (van Soeren et al., 2009). The finding that more PHC NPs in hospital settings than in other settings had a master's degree in nursing may reflect organizational expectations.

The geographic distribution of PHC NPs in Ontario is explained in part by chronic shortages of family physicians and uneven access to health care (Chan & Shultz, 2005; CRaNHR, 2002). PHC NP practice in the North East LHIN, for example, is a direct result of policy intended to improve access to underserved areas (MOHLTC, 2009b).

Changes in the practice profiles of PHC NPs since the 2005 NP workforce study (van Soeren et al., 2009) include a decrease in the proportion of PHC NPs working in CHCs. This could be attributable to an increased number of NPs working with family physicians and the introduction of FHTs in both urban and rural parts of the province. PHC NPs working in CHCs had more years of experience as an NP compared to NPs practising in hospitals, a finding that may reflect the appeal of the organizational structure of hospitals for NPs with less experience. For example, salaries and unionization were highest for PHC NPs working in hospitals as compared to the other settings, and satisfaction with salaries was also highest for PHC NPs in hospitals. This is an important consideration for policy, as salaries varied greatly across settings and salary-based incentives were the most valued incentives across practice settings.

Challenges to NP role implementation were particularly evident in some practice settings. For example, in NP-led clinics, NPs spent more than twice as much time on nursing administration compared to NPs in other practice settings. This could be inherent in the leadership role NPs have taken on, or it could be that these clinics lack sufficient administrative support. NPs in FHTs and physicians' offices spent relatively little time on nursing administration and more time on direct client care. Restriction on prescriptive and diagnostic authority was most evident in hospitals and physicians' offices. Legislation introduced in 2009 has the capacity to more fully integrate NPs into the province's health-care system (Nurse Practitioners' Association of Ontario, 2009).

Collaborative practice involving NPs and family physicians is one part of a human resource strategy for health-care delivery (Way, Jones, Baskerville, & Busing, 2001). D'Amour, Ferrada-Videla, San Martin-Rodriguez, and Beaulieu (2005) argue for a conceptual basis for interprofessional collaboration and suggest that a deeper understanding of common theoretical elements, including "sharing, partnership, interdependency, power and process" (p. 118), would be helpful. Our work shows that, for the most part, PHC NPs across all practice settings provide the majority of client care autonomously while occasionally consulting with other health professionals. When a client's health needs require care beyond the PHC NP's scope of practice, the NP must consult or collaborate with a partnering physician. Although collaborative relationships between NPs and family physicians are relatively new and the structure of the relationship varies with the practice setting, expressed satisfaction with the relationship was high.

Satisfaction with interactions between professionals has been described as an outcome in theoretical frameworks of interprofessional collaboration and the related concept of teamwork (D'Amour et al.,

2005). Furthermore, the success of collaboration has been postulated to depend upon three main elements: interactional determinants, organizational determinants, and systemic determinants (San Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005). The high level of practice satisfaction reported by our study participants may be explained by any or all of these determinants. Lack of familiarity with the full scope of NP practice on the part of physicians not working directly with NPs may be a reason why NPs reported that relationships with these physicians "needed work." Administrative barriers to NPs being recognized as a direct referral source and the sensitivity that surrounds payment matters under the Schedule of Benefits for Physician Services (Nurse Practitioner Integration Task Team, 2007) may also explain this finding.

This study had a number of limitations. The analysis relied on self-reported data. Some data, such as proportion of time spent on different activities and hours worked, were reported by respondents as estimations and averages. As the sample was drawn from a list that excluded NPs who did not give the CNO consent to release their home addresses for research purposes, a selection bias exists. Due to the small number of NP-led clinics, results related to this group should be considered with caution. Finally, due to the small numbers of respondents working in practice settings such as long-term-care facilities, public health units, and mental health clinics, responses were grouped and reported under one category ("other") to ensure the confidentiality of respondents. This impeded us from exploring and revealing similarities and differences in NP practices among these settings and with the other practice settings.

Implications

The growth in PHC NPs prepared at the master's level globally and within Canada (Canadian Institute for Health Information, 2008; CNA, 2009; Pulcini et al., 2010; RCN, 2006) suggests a need to examine PHC NP education and regulation policy in Ontario to raise the minimal educational requirement to that of other jurisdictions. A consultation process should be undertaken with the CNO, the provincial government, and the COUPN to include a clear statement of level of education required for NP registration in NP regulation, similar to that used in the regulation of RNs, which clearly states the level of education required for registration. An understanding of the burden of nursing administration in NP-led clinics relative to other practice settings and the impact on practice is required to better inform practice organization processes and funding policy directions. Overall, the findings suggest a need to further describe the models of practice and their impact on primary health care outcomes.

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