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The first decade of nurse practitioners in New Zealand: a survey of an evolving practice

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Abstract

Background: Nurse Practitioners (NPs) have been registered in New Zealand (NZ) since 2002. This article describes a sample of their practices and outcomes across a variety of healthcare specialties. The PEPPA model was used as a guide for the organisation of data, the discussion of findings and recommendations for the future.

Methods: Two emailed surveys of registered NPs (including qualitative and quantitative data) were conducted by the professional organisation, Nurse Practitioners New Zealand in 2011 and 2012.

Conclusions: After 10 years, NPs in NZ demonstrated efficient practice and have produced measureable improved health care outcomes.

Implications for practice: NP practices are continuing to develop and are contributing to increased access to health care and improved health outcomes in New Zealand.

Introduction

In 1998 the New Zealand Ministerial Taskforce on Nursing released a document identifying the potential for nurses to contribute to improved health care outcomes; specifically, the taskforce recommended the development of the nurse practitioner (NP) advanced nursing practice role. The taskforce foresaw roles in the community, hospitals, schools, and other care providing agencies (Ministerial Taskforce on Nursing, 1998). In 2001 the Nursing Council of New Zealand (NCNZ) identified seven practice areas they believed the NP could impact the most. The areas were mental health, chronic disease management, emergency and trauma, perioperative, palliative, primary care, and high dependency care. (Nursing Council of New Zealand, 2002) The following year the NCNZ announced it would begin the registration process for the Nurse Practitioner scope of practice. Later that year the council registered New Zealand's first NP, a neonatal nurse practitioner. NCNZ registered the 100th NP early in 2012. According to the NCNZ as of May 31, 2013, 121 nurse practitioners had been registered by NCNZ (C. Rubio, registration consultant Nursing Council New Zealand).

To become eligible for registration in NP in NZ an individual must have a minimum of 4 years experience in a practice area and have completed a clinical master's degree in an approved nursing council program (Nursing Council New Zealand, 2013). The individual then submits a portfolio documenting how they have achieved the competencies of the NP. If the portfolio review by council is successful the individual is then invited to a panel interview / oral examination where further discussion of the nurse's abilities to function as a safe and competent NP occurs. It can often take nurses

two to three years to complete the Nurse Council portfolio process after completing their post graduate education.

Nurse Practitioners in other countries have been shown to positively impact the quality and quantity of life experienced by the individuals, families, and communities they serve (Brown & Grimes, 1995; Cooper, Lindsay, Kinn, & Swann, 2002; Larkin, 2003). NPs have also been shown to practice in a cost-effective manner (Hunter, Ventura, & Kearns, 1999; Jenkins & Torrisi, 1995; Paez & Allen, 2006; Spitzer, 1997). The argument follows that NPs in New Zealand could do the same. The question is have the NPs in New Zealand achieved similar outcomes?

The participatory, evidence-based, patient-centred process or PEPPA model for implementation and evaluation of new Advance Practice Nurse (APN) health care roles has been used as a framework to support APN need, identify APN goals, promote integration and utilization of APN knowledge, skills and expertise, create supportive practice environments for the APN role, and promote continuous evaluation or APN role development (Bryant-Lukosius & Dicenso, 2004; McMasters University). The PEPPA framework served as a tool in evaluating the progress of the NZ APN role.

PEPPA is a 9 step framework that can be used to identify and clarify the goals, role, and issues that need to be considered and addressed when creating, implementing, and evaluating a new role in the health care arena, specifically the APN role (Bryant-Lukosius & Dicenso, 2004; McMasters University). The nine steps are as follows:

1. define the patient population and describe current model (i.e., identify interactions with health care providers and services to understand and describe the current model of care)

2. identify stakeholders and recruit participants
3. determine need for a new model of care (i.e., conduct a health needs assessment)
4. identify priority problems and goals (i.e., participating stakeholders establish outcome based goals to improve the model of care)
5. define the new model of care and the APN role (i.e., types of APN roles are considered)
6. plan implementation strategies (i.e., ensure system readiness for the APN role and identifying facilitators and barriers)
7. initiate APN role implementation plan (i.e., hire the APN, monitor the progress of the role, and initiate/modify strategies to support the APN role)
8. evaluate APN role and new model of care (i.e., systematically evaluate the APN role structure, processes and outcomes to promote on going role development and enhancement)
9. long term monitoring of the APN role and model of care (i.e., iterative process to ensure the APN role is relevant, sustainable and improved based on new research, health care environment changes, treatment practices and patient needs)

The focus of this paper is step 8, evaluation of Advance Practice Role and new model of care. The evaluation approach in step 8 focuses on structure, process and outcomes. Structure can be thought of as the human, physical and financial resources needed to provide care. Process refers to the types of services and methods of delivery. Outcomes are changes in the client's current or future health status. Outcomes are

impacted by the structure and process of health care delivery. Researchers suggest that initial outcomes to be evaluated should relate to safety, efficacy, acceptance, satisfaction, costs and role transfer (Mitchell-DiCenson, 1996).

Incidentally it is noted in New Zealand, many of the steps identified as pre-requisites to the initiation of a new NP role in the PEPPA framework actually occurred during the “initiation of role implementation” or step 7 rather than in earlier steps of preparation for the role as described in the PEPPA model. The failure to fully address the issues identified in the earlier steps has led to some interesting issues for NPs in New Zealand around funding, system support, prescribing, and other barriers to the full utilization of the role in a variety of settings. This is a discussion worthy of another paper and not addressed further in this document.

During the first decade of the New Zealand Nurse Practitioner role implementation many individual NP roles were evaluated, but to date there has not been a comprehensive description of NPs in New Zealand or the NP role implementation audits and studies that were conducted. The purpose of this research is to describe the existing NPs practicing in New Zealand and present findings of qualitative and quantitative analysis from Nurse Practitioners surveyed regarding clinical practice in New Zealand. This article presents data describing NPs practicing in New Zealand as of 2012 and includes data reflecting evaluation of some of these practices. The findings are based on the available data from the practices of a self-identified sample of the NPs in New Zealand.

Methodology

Two surveys were completed in New Zealand. The first survey approved and completed in 2011 was conducted by Nurse Practitioners New Zealand (NPNZ) using email. NPNZ is a national organization representing and advocating NP practice in an effort to facilitate quality integrated healthcare throughout New Zealand (College of Nurses Aotearoa New Zealand). NPNZ invited Nurse Practitioners across New Zealand to submit previously collected practice evaluation data they were willing to share with researchers via return email. The invitation was extended to the members of the professional organisation Nurse Practitioner New Zealand. Members were also asked to contact NP colleagues that were not members of this organisation and ask them to respond to the questionnaire. Three months were allowed for NPs to respond and one follow-up reminder was issued two months from initial announcement. Evaluation data provided by the NPs were grouped by themes by a PhD prepared nurse researcher and shared with two other PhD prepared nurse researchers. The grouping of evaluation data were according to the three categories of structure, process and outcome evaluation supported by PEPPA (Bryant-Lukosius & Dicenso, 2004).

It is important to note the quality of each project reported by the NPs was not assessed for this project. It was accepted that the evaluation data reported by the participating NPs were collected and analysed using a validated method by each individual NP submitting the information. All data collected were de-identified; individual practices or patients could not be identified from the data and each NP provided all data willingly.

The second survey, approved and conducted in 2012 by NPNZ also invited NPs to participate via email. This second survey was descriptive in focus. The purpose was to describe current NP practice in New Zealand, including how long NPs had been practicing, where they were practicing, if they were prescribing, and how supportive their work environments were.

All registered NPs in New Zealand were sent an email from NPNZ asking them to complete an online survey. The email included the link to the survey. To participate the NP had to go to the site and respond to the questions. Survey Monkey tool was used to present questions and collect the data. A time limit of one month for NP response was established. Descriptive analysis included Survey Monkey response ratios and basic SPSS statistical analysis.

Ethical considerations

All on-line survey participation was voluntary by NPs. All on-line survey data were reported in aggregate and individual participants could not be identified. All NP practice evaluation data were conducted as healthcare audits by the NP and support personnel employed by the organisation in which they practice. All data reported by the NPs were reported as aggregate and all participants were anonymous. According to New Zealand National Ethics Advisory Committee guidelines the audit and survey methods were classified as low risk and did not require formal ethics committee evaluation (National Ethics Advisory Committee, 2012).

Limitations of the study

Limitations centered on methodology, such as lack of control over the data collected, analysed, and submitted by the individual NPs who responded to the call for

information about their practices. It is possible there was response bias; perhaps other NPs in NZ had data but failed to submit it because it did not support a positive impact on clients or the systems where they worked. Another limitation may relate to the use of email to invite participation. It is possible that the 25 NPs who did not respond to the request to participate never received the invitation. The use of email solicitation did not allow for any gathering of info on non-responders.

Given the relatively small population of approximately 4.5 million in NZ (Statistics New Zealand, 2013), the low numbers of registered NPs at the time of data collection and the overall purpose of the research, the following results can be considered a useful first step for the review of the implementation and evaluation of the advanced practice role in NZ.

Results

Results for the two surveys are presented in reverse order of the actual data collection described above. This order provides a picture of NPs in New Zealand before presenting the practice evaluation data.

Descriptive Survey

Seventy-six NPs responded to the survey from a possible 100 that could be reached for a response rate of 76%. However not all 76 responded to every question in the survey. The majority of the respondents have been registered as NPs between two and five years. Eight percent of the NP respondents were not employed in NP roles, 17% were not authorized to prescribe medications, 6.8% did not order laboratory tests, while 21.1% did not order radiology investigations. Initial barriers and inconsistencies of access in ordering radiology have had considerable influence on this figure nationally.

Ninety-three percent did believe they worked in a supportive environment and 89.3% received financial support to maintain competencies. Table 1 summarizes the findings of the 2012 descriptive study.

Closer scrutiny of the data revealed that Nurse Practitioners with less than 5 years NP registration were more widely distributed geographically than those with 5 years or more NP registration. There was significant difference between those with less than 5 years NP registration and those with five years or more NP registration for prescriptive authority ($p=0.038$) and funded or allocated time for teaching others ($p=0.035$, see Table 2). That is, NPs with less than 5 years NP registration were more likely to have prescriptive authority (odds ratio = 3.3, $p=0.029$) and less likely to have funded or allocated time for teaching others (odds ratio = 0.25, $p=0.029$). There were no significant differences identified between NP's with prescriptive authority and those without prescriptive authority (see table 3) when analyzing percent of NPs employed in a clinical role, working at full potential, reporting available resources to practice safely, teaching others in effort to support NP role, reporting employer support to meet competencies, or currently employed in a pilot position.

Evaluation Data

Of the 88 NPs eligible to participate in 2011, fourteen NPs submitted practice audit data for inclusion. Three NPs stated they were newly registered and had not yet begun to collect data, four NPs responded that they were not yet working in NP roles despite being registered for several months, and four NPs responded they no longer lived in NZ.

From the 14 studies submitted four studies included data about reduction of hospital admissions, three presented data on reduction of waiting times or improved adherence to guidelines of care, two reported increased patient satisfaction with care, decreased waiting times for acute services, reduction in readmissions and unexpected call out visits, or relapse, and two included the outcome of workforce skill development. All other data listed below were reported within unique studies. As an example, one study reported a moderate level of NP satisfaction with the role and collected information on barriers to implementation of the role across the responding NPs. Table 4 summarizes the 2011 study practices of NPs.

The evaluation data from the 2011 study are presented in table 5 grouped according to the PEPPA recommended structure process outcome evaluation model. This table is presented to assist in the visualization of areas that NZ NPs are addressing and areas where further work can be done to address the evaluation of the advanced practice role. It should be noted that each column of the table stands alone, that is the structure, process and outcomes reported are not read across, as it is not likely that all three concepts were addressed in any one NP study.

Discussion

What was identified:

NPs in New Zealand are dispersed cross the country and evenly across rural and urban settings. The increased distribution of NP's geographically conveys the increased support and funding of study and roles into provincial and rural regions of NZ by smaller District Health Boards (DHBs) and organizations to foster the growth of prospective and then registered NPs. Although not all NPs have prescriptive authority, most actively

engage in frequent use of laboratory and radiological investigations. Most NPs practice to the fullest extent of the scope of practice and are supported with clinical resources and continuing education by their employers. Although there were few statistically significant differences between NPs practicing less than 5 years and those practicing 5 years or more, it was not surprising that those with more than 5 years experience were less likely to have their prescriptive authority. This finding reflects the fact the early NPs could choose not to prescribe, and many did make that choice. In more recent times prescribing has become a more accepted part of the NP role. It could also be that new graduates in the past 5 years have job opportunities with higher expectations of prescription authority. It also may be due to the pending NCNZ requirement that all NPs be qualified to prescribe by 2014 (Nursing Council of New Zealand, 2013).

Other differences noted between the less than 5 year and more than 5 year registered NPs may suggest a wider spread and acceptance of NP practice as the 'Primary Health Care' (PHC) scope has emerged. As the PHC scope registration gained momentum, the shift of funding such positions widened from DHB to private practices, Primary Health Organisation's (PHO's), and not for profit trusts. The transformation of contracts to include allocated time for teaching may reflect an increased faith and understanding of the value and function of the NP's role, practice skills and capabilities or the increase in funded or allocated time for education may reflect lessons learned by newer graduates who now request funding in their employment contracts or finally this increase may reflect employers recognition that to be competitive, professional education must be in the contracts.

Although one would think that a NP with prescriptive authority might be more likely to be in clinical practice and working to their full potential, this was not the case when compared to NPs without prescriptive authority. This finding might suggest that there is no clear model to clinical practice and working at full potential or scope of practice. The factors involved in a clinical practice model are complex and not well defined in this small sample size. Although support for the NP clinical role and actual scope of practice continues to evolve, further NP clinical practice research is warranted.

Since 2002 in New Zealand, 14 known NP audits/studies have been completed. The majority were focused on a single NP practice and were completed by the NP as part of an audit of their individual practice. That being stated, distribution of evaluation data was across all three of the identified categories of structure, process and outcome. However less data were presented on the structure and process of health care delivery than on the impact of the advanced practice role as a new model of care.

The PEPPA model highlights NP implementation issues encountered in New Zealand over the last 10 years. For instance, step one of the PEPPA model suggests a clear definition of the model of care and patient population. In New Zealand, the overall scope of practice for the Nurse Practitioner has evolved from a narrow and often disease or condition specific focus (i.e. diabetes or wound care) to a more broad Nurse Practitioner role (primary care).

Steps 2-7 of the PEPPA model involve clear identification of the NP model of care, stakeholders, identification of problems and goals, and clear implementation strategies. Full implementation of steps 2-7 requires a team approach that includes clear healthcare system leadership, funding allocation, administrative support and clinical team

integration. In New Zealand NPs became registered without necessarily having a role in which to practice. Often the newly registered NP drove the development of the role within their healthcare system, some with and many times without full administrative, collegial, or consumer support needed for such a daunting task. However, without the motivation of individual NPs in the early days, many NP roles would not have been realised. In ideal circumstances, both the NP model of care and the NP would develop together in a well-planned manner, with adequate support and funding; in New Zealand this was rarely the case.

Most of the audit data reflect the recommendation to initially address outcomes of safety, efficacy, acceptance, satisfaction, costs and role transfer. Aspects of efficacy and satisfaction have been clearly addressed. Efficacy would imply safety outcomes were being met; however, this is not explicit in any of the projects submitted. Costs were indirectly addressed as the NPs involved impacted variables such as admissions, unexpected visits, and lengths of stay. It may also be implied that the NPs actually generated revenue (not just reduced costs of service) by allowing primary care practices to increase enrolments (outcome: increased access to primary care and specialty clinics), to reduce waiting times, and increase clinic visits therefore seeing more patients.

Welcomed but not surprising findings included one study reporting increased employee satisfaction and a second study reporting moderate levels of job satisfaction by NPs surveyed.

What needs to be addressed:

Most of the evaluations research being conducted in NZ has focused on proving the value of the role, something that has been well documented in other countries

(DiCenso et al., 2010; Horrocks, Anderson, & Salisbury, 2002; Newhouse et al., 2011), however, healthcare delivery models that are successful in one country or healthcare system may not be successful in another system for a wide variety of reasons (Morgan, 2010; Patrick et al., 2006). As eluded above, no clear model for the introduction and evaluation of the advanced practice role in New Zealand was used, therefore many pieces of the implementation phase are on-going as the role continues to develop and be implemented.

The last step of the PEPPA model (i.e., step 9) has not been fully realised in New Zealand. There is not a clear national policy of NP implementation currently, therefore, there continues to be *ad hoc* development of NP roles and little ability to formulate a long term monitoring and evaluation plan of NP roles and NP models of care.

At the 10-year anniversary of NP registration in NZ, questions remain about the best way move forward both in the implementation and the evaluation of the role. The individual study that focused upon the satisfaction levels of NPs and the barriers they confronted may be a good place to begin. Many of the barriers identified in that study were of the structure and process type and could create the foundation for future action by NPs.

Conclusion

The data presented in this summary reflect much hard work and worthy contributions to the health of residents of New Zealand by the NPs. It is clear that NPs are practicing in an efficient manner that produces measureable outcomes for the health care systems in which they work and for the clients with which they provide care. Given these positive findings it is important to identify and address structure and process

variables that may hinder further implementation and expansion of this scope of practice. It is also important to continue to collect health outcomes related to the clinical, educational, and professional practices of Nurse Practitioners in New Zealand.

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Table1. Summary of New Zealand NPs

Survey question	Number or responses (%) N=76
Length of NP registration	
Newly registered	14 (18.4)
1-2 years	5 (6.6)
2-5 years	36 (47.4)
5-8 years	15 (19.7)
8-10 years	6 (7.9)
Practice setting	
Urban	33 (48.0)
Rural	39 (52.0)
Currently employed in a NP role	
Yes	69 (92.0)
Current Employer	
District Health Board (DHB)	44 (60.2)
Physicians Health Organization (PHO)	6 (8.2)
Independent practice	5 (6.8)
Private medical practice	11 (15.1)
Non-government organization (NGO)/Trust	11 (15.1)
University	6 (8.2)
Self employed	5 (6.8)
Prescribing status	
Authorized and prescribing	59 (78.7)
Authorized but not prescribing	3 (4.0)
Not authorized but intending to apply	8 (10.7)
Not authorized and not wanting to prescribe	5 (6.7)
Use of laboratory investigations	
Ordering daily	47 (63.5)
Ordering weekly	13 (17.6)
Ordering fortnightly	7 (9.5)
Ordering monthly	2 (2.7)
Authorized but do not order	5 (6.8)
Use of radiology investigations	
Ordering daily	16 (22.5)
Ordering weekly	17 (23.9)
Ordering fortnightly	6 (8.5)
Ordering monthly	17 (23.9)
Authorized but do not order	15 (21.1)
NP role function to its fullest potential	
Yes absolutely	17 (23.3)
Yes mostly	40 (54.8)
Yes partially at times	9 (12.3)
Not really	3 (4.1)
Definitely not	4 (5.5)
Current work environment provides necessary resources and support to practice safely	
Yes absolutely	26 (36.1)
Yes mostly	31 (43.1)

Yes partially at times	10 (13.9)
Not really	3 (4.2)
Definitely not	2 (2.8)
Employer financial support to maintain NP competencies by the New Zealand Nursing Council every three years	
Yes fully	25 (33.3)
Yes partially	42 (56.0)
Not at all	8 (10.7)
Is your NP position a pilot position	
Yes	6 (8.3)

Table 2. Comparison between New Zealand NPs with less than 5 years NP registration and those with 5 years or more.

	4 years NP registration or less (N=55)	5 years NP registration or more (N=21)	P-value
Currently employed in clinical role (%)	50 (92.6)	19 (90.5)	0.542
Prescribing authority (%)	48 (88.9)	14 (66.7)	0.038
Work to full potential (%)	48 (88.9)	18 (94.7)	0.410
Resources available to practice safely (%)	50 (94.3)	17 (89.5)	0.397
Support NP role by teaching (%)	50 (90.9)	20 (95.2)	0.467
Employer support to meet competencies (%)	48 (88.9)	19 (90.5)	0.604
Funded or allocated time for teaching others (%)	24 (46.2)	14 (73.7)	0.035
Currently in NP pilot position (%)	5 (9.4)	1 (5.3)	0.496

Table 3. Comparison between New Zealand NPs with no prescriptive authority and those with prescriptive authority.

	No prescriptive authority (N=13)	Prescriptive authority (N=61)	P-value (difference between groups)
Currently employed in clinical role (%)	11 (16.2)	57 (83.8)	0.283
Work to full potential (%)	10 (15.4)	55 (85.6%)	0.330

Table 4. Summary of NP registration, work setting and evaluation findings.

NP Registration	Setting	Findings
Adult Emergency Care	Emergency department urban centre	Increased compliance with triage sign on times Decreased waiting times Decreased length of stay Decreased episodes of violence in centre Increased patient satisfaction
Adult Urology	Specialty service urban centre	Decreased waiting lists Increased revenue generation for service
Cardiology	Specialty service urban centre	Decreased waiting time Improved medicine management Services more closely adhered to guidelines
Gerontology	Specialty service urban centre	Decreased hospital admissions Decreased hospital length of stay Increased specialty assessments Increased skills knowledge residential aged care nursing workforce
Intensive care & high dependency	Acute hospital urban setting	Decreased ICU readmissions within 72 hours
Mental health and intellectual disabilities, adult	Urban centre	Decreased waiting time for new assessments and follow-ups Decreased relapse rates Decreased inpatient admissions Decreased use of mental health act
Mental health and intellectual disabilities (older adult)	Residential care of elderly	Decreased hospital admissions Decreased length of stay Improved symptom management Decreased after hours GP visits Improved guidelines and treatment plans Workforce development and empowerment Improved employee job satisfaction
Ophthalmology	Specialty service urban centre	Decreased waiting times for first assessments and follow ups Improved patient satisfaction Improved adherence to guidelines
Palliative	Long term care	Decreased Hospital admissions Decrease unscheduled GP visits Improved symptom management Decreased unscheduled prescriptions by GP
Palliative	Acute hospital urban centre	Decreased admissions for symptom management Decreased admissions from rest homes Improved quality of life patients and families Increased skills knowledge palliative nursing workforce
Primary care	Academic urban setting	Moderate levels of job satisfaction amongst NP respondents Several barriers to practice identified
Primary care	Private practice rural centres	Expand enrolled populations Increased accessibility of primary care services
Primary Care (Whanau Ora)	Mobile primary care service for Maori	Establishment of NP clinic in area without services Decreased hospital readmissions for chronic care and high needs children Increased services to Maori clients

Table 5. Individual NP 2011 data grouped by structure process and outcome category.

Structure	Process	Outcomes
<ul style="list-style-type: none"> • Workforce development lead by NPs (Increase in numbers of NPs and NP interns) • Workforce skill /knowledge increase via contact with NPs • Increase capacity of specialty and primary care services • Improved distribution of work across provider types • Extending the capability of the healthcare team for afterhours care. • Improved specialist and generalist healthcare capacity 	<ul style="list-style-type: none"> • Increase adherence to guidelines and treatment plans • Increase availability/acceptability of primary care services to select populations • Expanding NP practice within the specialist multi-disciplinary team provide specialist assessment and follow up • NP providing afterhours call in partnership with the medical team • Expanding NP practice within the specialist multi-disciplinary team provide specialist assessment and follow up 	<ul style="list-style-type: none"> • Increased patient satisfaction • Decreased lengths of stay • Increase in client mental health and/or quality of life • Decreased polypharmacy • Decreased waiting times for appointments • Increase in employee job satisfaction • Decrease in use of mental health act • Decrease in after hours or unscheduled health visits • Decrease violence in delivery settings • Decrease relapse rates of chronic illnesses • Increase revenue generation • Moderate NP satisfaction with role • Decrease in re-admissions to hospital