International Journal of Nursing & Clinical Practices

Research Article Open Access

Comparative Synthesis of Primary Health Care Outcomes between Nurse Practitioners and General Practitioners

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Abstract

NPs are integral members of Primary Health Care teams, yet they are still underutilized. This research paper examines whether patients receive comparable health care when treated by Nurse Practitioners in comparison to general practitioners. The purpose of this paper is to explore and determine the effectiveness and quality of care provided in Primary Health Care by Nurse Practitioners in comparison to General Practitioners. Quality of care will be analyzed by exploring patient satisfaction and patient outcomes.

Publication History:

Received: February 16, 2015
Accepted: July 02, 2015
Published: July 04, 2015

Keywords:

Nurse practitioners, General practitioners, Primary health car

Introduction

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Access to primary health care (PHC) is an ongoing issue. There is an increased demand on the health care system to support patients to become healthier and have timely access to care [1]. The number of licensed NPs has doubled from 1, 344 to 2,777 between 2007 and 2011 [2]. PHCNPs, hereby referred to as NPs, practice in community settings acting as the first contact for people with minor illnesses and provide care for clients with chronic conditions [3]. Although NPs have been integral members of PHC teams, they are still underutilized [4] and often times not practicing to their full scope. Nevertheless, there still exists the question of whether patients receive effective quality of health care when treated by NPs compared to general practitioners (GPs). Quality and effectiveness of health care can be analyzed by exploring patient satisfaction (PS) and patient outcomes; these are recognized as important indicators of quality of care in PHC [5,6].

Ontario's action plan for health care is to provide Ontarians "the right care, at the right time, in the right place" [1], yet, many Ontarians are still without a primary care provider. NPs have demonstrated the ability to enhance accessibility and the quality of health care that patients receive. For the sustainability and expansion of the role, care and services provided must be perceived as acceptable as or better than existing services [7]. Ongoing approval and support of NPs relies on acceptance of the NP role; if patients value NPs and GPs equally, and the care is comparable, this will likely provide rationale to sustain the NP role.

Quality of Care: Patient Satisfaction & Patient Outcomes

PS is an important measure of Canadians' experience with the health care system [8]. To improve the quality of care, researchers focus on measuring PS as a performance indictor [9,10] of areas where HCPs are doing well and areas where improvements can be made and provides direction to meet Ontario's action plan for health care. PS has been defined as the degree to which patient expectations of health care are perceived as fulfilled [7]. Indicators of PS in the emergency department (ED) have been outlined by CIHI [5] as having consideration and showing care and respect to patients, communicating, providing information, listening, involving patients in decision making, overall impressions, and willingness to return.

Studies have found PS to be associated with a) length of consultations [7,11-18], b) information provision [7,11-15,18-23], c) sense of feeling cared for [7,14,18], d) communication [11-14,16,18-20,22,23], and e) willingness to return to see the same HCP [15-17,19,20,23].

The Institute of Medicine [24] defines quality of care as the degree to which health services for individuals increase the likelihood of desired health outcomes and is determined by its effectiveness in achieving health and PS [7]. Patient outcomes are influenced by the care they receive [25] and are of central importance as the primary means of measuring the effectiveness of health care delivery [5] . Similar elements have been identified and evaluated in many studies on NPs and GPs.

Common patient outcomes in PHC reported include, a) resolution of symptoms and concerns [11,15,18,20,23], b) ability to perform activities of daily living [11,20,23,26] and c) adverse events such as missed fractures [11,21]. Quality of care has been associated with investigations ordered [11,12,15-17, 20,26] , health status [12,17,18, 20-23] and x-ray interpretation [12,19].

Literature Synthesis and Critical Appraisal

RCTs: Several RCTs were critically appraised. Dierick-van Daele et al. [20] conducted a RCT evaluating outcomes of care provided to patients with common complaints by NPs and GPs in primary care. Questionnaires used to collect data were reliable and valid. Comparable results were found between groups on aspects of PS (provision of information, communication). Patients equally reported they would visit the same HCP in the future [20]. Similarly, Kinnersley et al. [15] also studied whether care from NPs differed from GPs in primary care. In their RCT amongst ten general practices, although overall PS was equal between the two groups, in three settings, patients consulting a NP were significantly more satisfied. Patients managed by

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Citation: Wojenska E, Staples E (2015) Comparative Synthesis of Primary Health Care Outcomes Between Nurse Practitioners and General Practitioners. Int J Nurs Clin Pract 2: 137. doi: http://dx.doi.org/10.15344/2394-4978/2015/137

the NP group reported receiving significantly more information. The rigour of both these studies was strengthened as patient assignment was randomized and concealed, still, participants, clinicians and outcomes assessors were not blinded, which would strengthen these studies further. Dierick-van Daele et al. [20] also reported no differences in patient perception of quality of care provided between NPs and GPs. Although not statistically significant, the NP group reported improved health status. No differences were found amongst patients in the two groups for number of days being unable to perform their daily activities due to illness [20]. Results are at risk of selection bias due to a convenience sample of patients. In two RCTs, there were no differences between the two groups in resolution of symptoms and concerns at two weeks follow up, and no differences in investigations ordered [20,15]. Kinnersley et al. [15] also reported no differences for patient outcomes between NP and GP groups. Findings from these studies are generalizable and important to consider as sample sizes were large and researchers included participants across multiple practice settings.

Comparing NPs and physicians in an ED fast track unit, Dinh et al. [21] found PS scores significantly higher in the NP group; results were still statistically significant after researchers adjusted for variables such as waiting time. Results of this study should be considered with caution as a small convenience sample of ED patients was utilized with large loss to follow up. Similarly, Venning et al. [17] randomized and concealed assignment in their RCT; results indicated that patients were more satisfied with NP consultation in comparison to GPs. Still, intention to treat analysis was not performed and the randomization code was broken by one of the researchers; results are at risk of bias [27]. Additionally, in an RCT examining quality of care delivered in an ED, there were no differences in rates of adverse events or health status between physicians and NPs [21]. Despite risk of selection bias, patients were randomized, assignment was concealed and intention to treat analysis was performed, thus strengthening the rigor of this study [27].

Venning et al. [17] measured health status in patients by having them complete measures prior to initial consultation with the NP or GP and at two weeks; data were coded, double entered, and verified. No differences in health status were found at the end of two weeks, a finding consistent with Dinh et al. [21]. In contrast to the RCTs by Dierick-van Daele et al. [20], and Kinnersley et al. [15], Venning et al. [17] found NPs ordered more investigations. These investigations were associated with health prevention interventions such as cervical cancer screening; it was noted that findings could not be generalized to all situations [17].

Cooper et al. [11] measured the quality of care provided by NPs in comparison to Senior House Officers (SHOs), described as junior doctors in the UK. Methods and tools were valid and reliable and a sufficiently large sample was utilized to show statistical significance. Response rate of 83% was achieved with satisfaction questionnaires. Consistent with other RCTs [15,17,21], patients were more satisfied with treatment from NPs ([11]. Patients in their study also reported that NPs provided more information and were easy to talk to [11,15].

Consistent with other RCTs, Cooper et al. [11] also reported there were no differences in symptom resolution, level of activity [20,15], and adverse events [21] amongst patients being cared for by NPs in comparison to SHOs. Unlike the six other RCTs included in this paper, Cooper et al. [11] were able to blind outcome assessors, thus decreasing risk of bias in results [27].

In another RCT of strong quality with a large sample, findings seem to be conflicting. Mundinger et al. [16] found that at 6 month follow up there were no statistically significant differences in overall PS and communication. However, they found that NPs had lower satisfaction ratings for provider attributes (technical skill, personal manner, time spent with patient) in comparison to GPs. Mundinger et al. [16] noted that a 0.1 difference on a 5.0 scale was statistically significant, but unlikely clinically relevant. In phase two of this study, Lenz et al. [22] also found no differences in overall PS between the two groups at two year follow, but GPs scored higher on communication. Authors appropriately noted a large loss to follow up, thus compromising the study's validity. Findings from both these studies have limited generalizability as patients were mostly females and Hispanic, enrolled in Medicaid.

Mundinger et al. [16] also compared outcomes for patients randomized to NPs or GPs. In this rigorous RCT of a large sample size, no significant differences were found in patients' self reported health status. Objective data in this study was also collected and researchers reported no physiological differences for patients with diabetes or asthma. For patients with hypertension, diastolic reading was significantly lower in the NP group of patients [16]. The results of this study are particularly important as NPs were similar to GPs in terms of patient responsibility. Unlike other studies [20,15], NPs had authority to prescribe medications. Results are likely valid as there were no baseline differences in demographics or health status among patients in the two groups [27]. In a follow up study two years later, Lenz et al. [22] found no differences in physiological measures between the two groups in diabetes, asthma, or hypertension. Consistent with phase one of the study, no statistical differences were found between NP and GP groups in patients' self-reported health status; it was reported that outcomes do not differ between patients assigned to NPs and GPs [22,16] . Lenz et al. [22] study had a large loss to follow up and did not reach statistical power to detect differences between groups.

SRs: SRs [12,19,26] have been critically appraised and the methodological quality of independent studies was assessed in all three SRs. Horrocks et al. [12] aimed to determine whether NPs can provide care equivalent to GPs in PHC settings. Nine RCTs in this SR reported on PS; researchers found patients were more satisfied with consultations with NPs than those with doctors. Patients reported NPs were better with communication and offered more advice on self care [12]. It is likely that this SR captured all relevant studies as researchers used several database with no language restrictions and made personal contact with experts [28]. Still, heterogeneity was observed between studies [12]. Horrocks et al. [12] located seven RCTs in their SR that reported specifically on health status. A comparison of results showed no significant difference in patient health outcomes between NPs and GPs. NPs seemed to identify physical abnormalities more often. NPs were as accurate as doctors at ordering and interpreting x-rays [12]. Results were not analyzed with meta-analysis due to heterogeneity between measures and studies in this SR were not adequately powered to detect adverse outcomes [12].

Carter & Chochinov [19] conducted a SR looking at NPs in ED settings. Their SR was limited to two databases and in the English language only. NPs and GPs did not differ in terms of overall PS, but PS was higher for NPs in some instances; patients received more information and discharge instructions from NPs [19]. Six studies in the SR by Newhouse et al. [26] compared PS levels among NPs and GPs in primary care. This rigours SR found PS was equal when

comparing NPs and GPs; findings were found to be generalizable. Carter & Chochinov's [19] SR reported NPs were able to provide a quality of care equal to that of a mid-level physician. Their findings were consistent with Horrocks et al. [12]; several of their studies indicated that NPs and GPs were equally competent in interpretation of x-rays, yet NPs had higher accuracy in physical exams [19]. Horrocks et al. [12] similarly reported that NPs seemed to identify physical abnormalities more often. Carter & Chochinov [19] made no personal contact with experts and no mention of searching unpublished literature; which would have increased the study's strength [28].

Qualitative studies: Two qualitative studies have been critically appraised; studies were found to be comparable in terms of quality and descriptive to explore patients' views on consulting with a NP in PHC in comparison to GPs [23,18]. The research questions fit with the qualitative methods used.

Williams & Jones [18] conducted in-depth interviews to examine patients' experience with NPs and specifically asked participants how it compared to consultations with a GP. Researchers collected and analyzed data appropriately and sample size was adequate as data saturation was reached [29]. Consistent with other studies above, they found patients appreciated the length of time the NP spent with them and the information they provided. Patients found the NP style of consulting to be different and better than that of GPs [18]. Patients felt more at ease, more supported and more able to manage their own health needs. Williams & Jones [18] concluded that it seemed evident that longer consultation time equated with greater satisfaction. Results of this study are difficult to generalize as it was conducted at one site and no demographic data was presented on patients. Williams & Jones [18] appropriately used judgment sampling in their qualitative study comparing NPs and GPs to get information rich cases. Still, the sample may not represent the entire population [29]. To strengthen this study, researchers made validity of the data a priority; careful, thematic analysis of data was done. Williams & Jones [18] found patients reported a high quality of care when consulting with a NP. Consistent with other studies discussed, patients found when consulting with a NP, their concerns were more addressed and resolved [18].

Reay et al. [23] qualitative study was conducted to report findings on the experience of introducing a NP into a physician clinic. In addition to snowball sampling, the NP provided a list of people whom she worked with as key informants; this may introduce bias to the results. Researchers appropriately conducted interviews as the primary data source. They also analyzed survey data; field observation would have been more appropriate [29]. Key informants overwhelmingly supported the NP role. Increased number of patients requested to be seen by the NP, indicating high satisfaction with NP care [23]. Consistent with studies of stronger methodology [11,15,20], the NP communicated well with people, provided education and information. In the qualitative study by Reay et al. [23], physicians reported they believed patients received better health care services because of the NP introduced into the clinic.They were very positive about the NPs ability to provide services. Physicians believed that a decrease in the number of ED visits for asthma related issues was attributed to the educational efforts of the NP with patients [23]. Consistent with studies of stronger methodology [15,17,20], NPs likely showed equal health status in patients they cared for. Patients felt more empowered to be able to engage in self-care [23]. Findings are limited as this study was conducted at one site with one NP.

Survey studies: CIHI [5] proposed that PS surveys be conducted annually to have the patient voice in quality improvement. Three surveys evaluating patient's views on care provided by NPs have been assessed for quality. Survey results should be considered with caution as many do not reflect the unique contributions of HCPs and their influence on outcomes [7]. Using a validated, highly reliable questionnaire, Laurant et al. [14] noted satisfaction scores were similar for NPs and GPs across all items, still NPs received slightly higher scores in some aspects (reassurance about symptoms, length of consultation, information on coping with the disease). This finding is consistent with the Horrocks et al. [12] SR. However, they also that found patients preferred GPs for medical treatment, discussing physical complaints and getting information about their disease [14]. Results are at risk of selection bias due to low response rate.

Jennings et al. [13] aimed to explore PS in an ED. Using a questionnaire that was valid and reliable, significant differences were reported in 12 of the 16 questions comparing NPs and ED doctors in favour of NPs. PS was greater with care provided by the NP [13]. Researchers failed to account for confounding factors, sample size was small and results are limited to generalizability. Thrasher & Purc-Stephenson [7] also assessed PS with care delivered by NPs in EDs. Findings indicated patients were very satisfied with care provided from NPs; 71% indicated they would prefer to see the NP. Patients felt the NP cared about their concerns, spent enough time in consultations and provided information. Despite a small sample, their study was of stronger quality as they attained a satisfactory response rate and attempted to control for influencing factors and selection bias [7].

Summary of findings: Examining RCTs, overall PS was equal amongst care provided by NPs and GPs [20,15,22] higher with care provided by NPs [11,21,15,17] one study found PS lower in the NP group [16]. Overall perception of the quality of care has been evaluated in three RCTS; quality of primary care delivered by NPs is equivalent to that by GPs [20,21,22]. Several of these RCTs have concluded that patient health outcomes for NPs and GPs delivery of primary care do not differ [21,16,22,17]. In two SRs, overall PS was equal when comparing NPs and GPs [19,26]. Horrocks et al. [12] found patients were more satisfied with care from NPs. Three SRs reported positive findings of NPs in comparison to GPs. NPs can provide care that leads to similar health outcomes when compared with care from a doctor [12]. Overall quality of care was reported as equal between NPs and GPs [19]. NPs can provide effective, high quality care and have an important role in improving quality of patient care [26]. Findings of qualitative studies are not totally replicable, still PS results were consistent with findings of several RCTs; patients were more satisfied with care from NPs [18]. The NP role in the clinic was viewed positively amongst key stakeholders due to high PS [23]. Despite methodological quality, both qualitative studies supported the role of [23,18]. Three surveys concluded that patients were more satisfied with care from NPs [13,14,7]. Survey studies included in this paper aimed to report on PS; researchers did not report specifically on patient outcomes. Jennings et al. [13] concluded their results imply that NPs can provide high quality of care.

Discussion

In general, patients were equally satisfied with care provided by NPs and GPs. NPs were found to be able to deliver health care that leads to similar outcomes as care provided by GPs. Studies indicate support for NPs in PHC and that NPs provide care that is of equal quality to GPs [16,17,19,20,22,26], of a high standard [15] and can achieve as good health outcomes for patients as doctors [14].

Patients value the time NPs are able to spend in consultations. PS is influenced by aspects such as length of consultation and communication [13]. A characteristic of NPs such as increased length of consultations possibly allows for interventions such as health promotion, health teaching, and health screening. NPs can use their skills to influence patient characteristics. PS is associated with increased compliance, treatment and follow up [21]. The relationship patients develop with NPs is likely positively influenced by the time the NP spends with the patient in providing information and answering questions. Patients are likely to be more satisfied with the HCP and ultimately their choices will be impacted by the relationship and trust they build with their HCP.

There are high demands placed on the health care system [1]; sustaining and utilizing NPs can assist with this pressure. Increasing the number of NPs can increase access to care in a timely manner for patients and meet their expectations of the health care system. This leads to NP interventions that can produce desirable outcomes (patient perception of being well cared for, satisfaction with care delivery, resolution of symptoms, improved overall health) [30]. Increased PS is associated with improved health status [7]. The choices patients ultimately make reflect patient outcomes. Recognizing variables such as timely access to care and identifying what patients want from HCPs can help NPs and GPs deliver quality care.

Implications for Practice and Research

Many studies were conducted in one practice setting comparing one NP with numerous physicians. Several compared NPs and GPs with different authority i.e. NPs were not able to prescribe medications. Others compared novice NPs with experienced GPs. Future studies need to report characteristics of HCPs. Weighing strengths and weaknesses in methodological quality, findings have been consistent.

Evaluating these results with care provided by NPs in comparison to GPs may offer more reasons to sustain and fully utilize the NP role. Understanding the NP role is critical so that NPs can practice to their full scope of practice, which ultimately affects the effectiveness of health care provided, patient outcomes, and patient satisfaction. It is vital to understand what patients want from their HCPs and the health care system. A better awareness of determinants that influence patient preferences and satisfaction can help to improve the services provided [14]. Studies of stronger methodological rigor are required in Canada.

Many studies have reported that NPs have longer consultations times [12,14,15,17,18,20,21]. NPs are able to spend more time exploring the disease with patients, listening to their concerns, and providing information and reassurance. Perhaps this may explain why patients are more satisfied with care from NPs at times [14]. Future studies should examine reasons as to why NPs consultation length is longer than that of GPs. Williams & Jones [18] reported that given longer time for consultation, PS with GPs would improve. A novel solution for the health care system may be to increase the length of consultations for all HCPs. If the length of consultation affects PS significantly and likely patient outcomes; then GPs should be able to incorporate longer consultation with patients. Longer consultations are associated with less frequency of use of health care resources. With longer consultations, patients reported going less often to see their HCP because they had enough time to ask all their questions and cover their concerns [18]. Future studies should examine the cost effectiveness and cost efficiency of such an intervention.

NPs have unique skills and are a valuable resource to the health care system. NPs can engage in information provision, health teaching, disease prevention, all factors that will likely decrease the chances of patients returning for repeated services. Such interventions decrease the burden and progression of diseases and cost on the health care system. Efforts to manage chronic diseases and its complications can reduce the economic burden of this disease [31].

Conclusion

Comparing NPs and GPs is essential to provide information that can be employed by the public and policy makers in sustaining and utilizing NPs. Findings have indicated that NPs are able to provide high standards of care. NPs are as effective as GPs in working with patients in ways that can lead to positive outcomes. It is vital to disseminate this message to the public and to politicians at the decision making level. Although SRs and RCTs are recognized as a gold standard for evidence [27], including qualitative studies and surveys also provided valuable contribution to this paper's topic. This paper demonstrates the impact of NPs and reasons why the health care system needs to utilize the role. HCPs are able to intervene and arrive at desirable outcomes by altering certain characteristics (i.e. increased length of consultations, providing information and communicating effectively).

The health care system is experiencing high demands for service; NPs are in the position to address issues that impact resources and quality of care provided. "Close to a million adults do not have a family doctor and those that do, have problems accessing them in a timely manner" [33]. The Government of Canada [34] recognizes that a high quality health care system is one that is accessible, effective, efficient, equitable, patient centred, and safe. This can be achieved with support, sustainability, and utilization of NPs in Ontario as they can improve patient and system outcomes. The health care system has an important role in supporting the NP role and educating public and policy makers.

Competing Interests

The authors declare that they have no competing interests exists.

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