A Description of Nurse Practitioners' Self-Report Implementation of Patient-Centered Care

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Abstract
Background: This study aimed to describe the nurse practitioners' self-reported implementation of patient-centered care (PCC) and factors that influence their delivery of PCC. It was guided by a conceptualization of PCC that identified 3 components that distinguish PCC (i.e., holistic, collaborative and responsive care) and respective activities that operationalize them.
Methods: A sample of 149 nurse practitioners employed in acute and long term care settings, in Ontario, Canada, completed a valid and reliable measure of the extent to which they implemented the 3 PCC components.
Results: The results indicated that the majority of respondents reported engagement in most activities reflective of the PCC components most of the time and that experienced nurse practitioners performed a large number of these activities.
Conclusions: Further research should examine the contribution of each PCC component, as implemented by nurse practitioners and other members of the healthcare team, to patient-oriented outcomes.

Keywords
Collaborative care, holistic care, nurse practitioners, patient-centered care, person-centered care, responsive care

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Introduction

Patient-centered care (PCC) is recognized as an important element of high quality care [1,2]. The application of this approach to care is expected to yield favorable outcomes including increased patient satisfaction with care, sense of empowerment and adherence to treatment, as well as improved physical functioning and emotional wellbeing [3]. Nurse practitioners are qualified to provide PCC given that this is related to their philosophical orientation and educational preparation [4], factors which enable them to think holistically [5], to individualize care to meet patients' needs and to facilitate patient education regarding self-management of illness [6]. Accordingly, PCC may be a process of high quality care that nurse practitioners can implement in their day-to-day practice and that may explain the mechanism underlying their effectiveness in promoting positive outcomes. The overall purpose of this study was to describe nurse practitioners' self-reported implementation of PCC.
Although PCC is considered an essential element of high quality care and several studies and reviews of literature have been conducted to clarify what exactly comprises PCC [7-15], there is no agreement on its conceptualization [16]. Differences in the definition of what constitutes PCC lead to variability in its

operationalization. Non-uniform implementation and measurement of PCC prevent systematic evaluation of its impact and building knowledge that clearly delineates its benefits in improving outcomes. Sidani and Fox [17] critically analyzed and synthesized available conceptual, empirical and clinical literature derived from diverse health professions, to identify the essential components that distinguish PCC from other approaches to care. Three components were posited as reflective of PCC: holistic care, collaborative care and responsive care.

Holistic care

Holistic care refers to comprehensive care that attends to all domains of health and encompasses health promotion, illness prevention, as well as disease management. It consists of the following specific activities: 1) assessment of the patient's health status, understanding of the health problem for which he or she is seeking care and of his or her health values and goals, 2) provision of relevant treatments that address needs and 3) discussion of strategies to promote self-management and health and prevent complications and illness. The holistic care component is comparable to the elements of PCC mentioned by others such as: ensuring physical comfort and emotional support [18]; identifying patients' physical, cognitive, emotional and social needs [19]; incorporating health promotion with disease management in patients' plan of care [20] and respecting patients' individuality and values [15].

Collaborative care

Collaborative care refers to the process of facilitating patients' engagement in treatment decision-making and in carrying out treatment or self-management recommendations. It is operationalized in a sequence of specific activities that entails: exploring patients' beliefs about the presenting problem, explaining treatment options available to address the problem and providing accurate and unbiased information about the nature, risks and benefits of each option; assessing patients' preferences for treatment and providing the treatment option chosen by patients. The collaborative component has also been identified as a core element of PCC by Kitson *et al*. [9] who called it 'participation and involvement', by Haggerty *et al*. [21] and Kvåle and Bonderick [10] who referred to 'shared decision-making' and by Robinson *et al*. [14] who have used the term 'patient involvement'.

Responsive care

Responsive care refers to the individualization of treatment to be consistent with patients' needs, characteristics and preferences. The specific activities reflective of this component of PCC are: selecting the type, mode of delivery, or dose of treatment that is congruent with patients' needs and preferences; responding to changes in patients' needs by modifying the type, mode of delivery or dose of treatment; addressing patients' concerns and facilitating patients' access to healthcare services and community resources they require successfully to manage their health problem. Individualization of care has been recognized as an element of PCC by Robinson *et al*. [14], Hobbs [8], Radwin *et al*. [12] and Morgan and Yoder [18].

It is the implementation of the 3 components (i.e., holistic, collaborative and responsive care), in combination, that characterizes the patient-centered approach to care. The implementation is facilitated by a therapeutic relationship between the healthcare professional and the patient. The relationship is not unique to PCC, as it develops in a variety of healthcare professional-patient encounters that may or may not involve the application of PCC. The relationship is based on mutual respect, open two-way communication and sharing of information [17].

The conceptualization of PCC as involving 3 essential components and the operationalization of each component into specific activities, presented previously, guided the development of an instrument to measure healthcare professionals' implementation of PCC (Sidani *et al*., submitted for publication). The measure was used in this study to determine the extent to which nurse practitioners engage in PCC within the context of day-to-day practice.

A range of factors have been proposed to influence the implementation of PCC and these factors relate to the characteristics of healthcare professionals and to the structure and process of care. Characteristics of healthcare professionals include educational preparation, training in PCC, experience and motivation and commitment to involve patients in treatment decision-making [22,23]. Structural factors pertain to: 1) the culture prevailing at the institution, whereby an emphasis on tasks and physical, medical and standardized care, constrains delivery of PCC [24,25] and 2) the availability of adequate staffing, workload and resources, which are required to enable healthcare professionals to spend time assessing patients' needs, exploring their values and preferences and providing services that appropriately address the needs of the individual patient. Process factors are concerned with the use of managed care pathways to guide care delivery and to improve efficiency, resulting in rapid patient turnover; this, in turn, limits healthcare professionals' time and ability to get to know their patients, which is critical to the accurate identification of patients' needs and to the individualization of patient care [22].

Accumulating evidence supports the beneficial contribution of nurse practitioners in acute care settings. Nurse practitioners' care was associated with decreased waiting time in emergency department [26], reduced length of hospital stay and costs [27] and increased satisfaction with care [28]. A few quantitative and qualitative studies were conducted to explore nurse practitioners' practices that may account for positive outcomes observed. The findings suggested that nurse practitioners deliver comprehensive care based on a thorough assessment and understanding of a patient's condition; spend time in providing education to patients related to their presenting problem and to self-management; involve patients in their own care and in care-related decisions and manage the healthcare system to ensure provision of services that patients need [5,6,28-30]. Sidani [31] examined the extent to which nurse practitioners provide PCC in acute care settings. PCC was observed in terms of patients' participation in care and in the individualization of patient care. Nurse practitioners (n = 31) reported engagement in PCC to a moderate level, which was consistent with the view of patients (n = 320) assigned to the nurse practitioner care, in medical and surgical units.

The current study

The evidence indicates that nurse practitioners' practices involve some elements of PCC. However, it is derived from studies that included a relatively small number of nurse practitioners, employed in specific clinical programs. The specific aims were to: 1) examine the extent to which the nurse practitioners engage in the 3 components of PCC: holistic, collaborative and responsive care and in the activities operationalizing the components and 2) to explore the relationships between selected factors and implementation of the PCC components. The factors pertained to nurse practitioners' level of education and years of experience, type of clinical program in which the nurse practitioners were employed and the average number of patients assigned to nurse practitioner care. Ethical approval was obtained from the Research Ethics Board at Ryerson University, Toronto, Ontario, Canada.

Methods

Design

A cross-sectional, survey-type, design was employed. Two strategies were applied to increase response rate: Dillman's method and provision of an incentive. Dillman's [32] total design method consisted of sending reminders at regular time intervals to prompt nurse practitioners to return the completed questionnaire. A list of nurse practitioners registered with the College of Nurses of Ontario and indicating employment in acute and long-term care settings was obtained. A package was sent to all nurse practitioners on the list who met the eligibility criteria. The package included: 1) a cover letter introducing the study, clarifying its purpose, risks and benefits and instructing the nurse practitioners willing to participate to complete and return the questionnaire. Returning the completed questionnaire indicated consent to enroll in the study; 2) a copy of the questionnaire, which contained items assessing the characteristics of nurse practitioners and selected structure and process factors and the instrument measuring the 3 components of PCC; 3) a postage-paid return envelope and 4) a $5.00 gift card for coffee. Reminders to return the completed questionnaire were sent at the schedule delineated by Dillman [32]: a postcard at 2 weeks; a copy of the questionnaire with a return envelope at 4 weeks and a postcard at 6 weeks after the mailing of the first package.

Sample

The target population consisted of nurse practitioners. Eligibility criteria were: 1) registration as a nurse practitioner with the College of Nurses of Ontario, 2) consent for the College of Nurses to release the nurse practitioners' name and contact information for research purposes and 3) employment in acute and long-term care institutions. The eligibility criteria were ascertained when requesting the list of nurse practitioners from the College of Nurses. The database maintained by the College can be sorted according to the specified criteria prior to selecting the nurse practitioners into the list. A total of 342 nurse practitioners met the eligibility criteria and were mailed the study package.

Variables and measures

The nurse practitioners' demographic (age and sex) and professional (level of education, years of experience as a nurse practitioner) characteristics were assessed with standard questions. Participants were asked to indicate the clinical program with which they were affiliated and the average number of patients assigned to their care over a shift. The nurse practitioners' implementation of PCC was measured with the instrument developed by Sidani *et al*. [33]. The measure contains 3 subscales measuring the 3 components of PCC. The holistic care subscale has 8 items related to the performance of comprehensive assessment of the patients' condition, knowledge of the presenting problem, provision of needed services and education for health promotion and self-management. The collaborative care subscale has 14 items covering activities reflective of engagement in the decision-making process, including: exploring patients' beliefs about the presenting problem to reach a common understanding of the problem, explaining the treatment options available to address the problem, eliciting patients' preferences for treatment, providing the selected treatment option and supporting patients in carrying out treatment recommendations and involving patients and their caregivers in patient care. The responsive care subscale has 7 items inquiring about individualization of care by selecting or modifying the type, mode of delivery and dose of treatment that is most appropriate to the individual patients and by facilitating patients' access to needed services and resources. The instrument has demonstrated content validity (content validity index > 0.90) and reliability [33]. Nurse practitioners were requested to indicate: 1) whether or not they performed the specific activities reflective of each PCC component and 2) the frequency with which they performed the activities, ranging from '< 1 day per week', '2-3 days per week' and '> 4 days per week'. Two scores were computed for each subscale. The first score quantified the total number of activities, listed in the subscale, that participants reported they performed. The second score represented the overall frequency with which the activities were carried out.

Data analysis

Descriptive analyses were conducted to characterize the sample and to address the first study objective. Specifically, the percentage of nurse practitioners reporting engagement in and frequency with which each activity was performed was computed. Measures of central tendency (mean) and dispersion (range, standard deviation) were estimated for the total subscales scores. Multiple regression was used to explore the relationships between the selected factors and the implementation of each PCC component, as stipulated in the second study objective. The total subscale score quantifying the number of activities performed, for each component, was regressed on the following predictors: level of education, experience, type of clinical program and average number of patients assigned to the nurse practitioners' care. Statistically significant relationships were evidenced with regression coefficients that were different from zero. The accrued sample size (n = 149) was adequate to detect significant association based on the rule of having 10 participants per predictor as recommended by Norman and Streiner [34], with only 4 predictors included in the regression equation.

Results

Response rate

Of the 342 packages mailed out, 3 were non-deliverable and 8 were returned, but not completed. Reasons given for non-completion were: currently not working as a nurse practitioner or in the targeted healthcare settings and not having the time to complete the survey. Of the remaining 331 packages, 149 were completed, yielding a 45% response rate.

Characteristics of nurse practitioners

The majority of nurse practitioners were middle-aged (74.5% were 40-59 years old) and predominantly female (96%). About two-thirds (77.2%) were Master's degree prepared; 20.8% had a BS and 1.3% had a PhD degree. Their years of experience as nurse practitioners ranged from 6 months to 26 years, with a mean of 7.7 (+ 4.8) years. Most (75.9%) nurse practitioners were employed in acute care settings. The remaining worked in complex continuing care / skilled facilities (3.4%), rehabilitation (4.0%), long-term care (8.7%) and ambulatory care clinics (4.7%). Participating nurse practitioners were affiliated with a variety of clinical programs (Table 1), with the most frequently reported programs being internal medicine, critical care and geriatrics.

The average number of patients assigned to the nurse practitioner care varied; 18.8% reported caring for < 10 patients at any point in time, 21.5% cared for 10-19 patients, 14.8% cared for 20-29 patients and 22.8% cared for > 30 patients; 22.1% of participants did not respond to this question. The respondents represented almost half of the nurse practitioners employed in acute and long term care institutions within the province of Ontario. They were affiliated with a variety of clinical programs, providing care to persons admitted to inpatient units and/or outpatient clinics and being responsible for the care of up to 29 patients on a given day.

Table 1 Distribution of nurse practitioners across clinical programs

Type of clinical program	Percentage
Perio-operative, anesthesia, pain	7.3
Emergency	11.7
Labor and delivery	0.7
Ambulatory	4.4
General surgery	0.7
Pediatrics	4.4
Critical care (ICU, NICU, cardiac)	14.6
Specialized surgery (neuro, orthopedics, vascular)	8.8
Internal medicine	21.2
Mental health	0.7
Palliative care	3.6
Rehabilitation care	2.2
Geriatrics	13.9
Long-term care	5.8

PCC component and activities	Performance (%)	< 1 day
HOLISTIC CARE		
Comprehensively assess patients' condition	98.6	4.3
Assess patients'	97.9	5.8

Implementation of patient-centered care

Nurse practitioners' responses to the items measuring the actual performance and frequency of implementing the 3 PCC components are summarized in Table 2.

The overwhelming majority (> 93%) of participants reported engagement in the 8 activities reflective of holistic care. Most (> 74%) indicated they frequently (> 4 days per week) assessed the patients' condition, knowledge of the presenting problem and personal health values; identified patients' concerns; monitored patients' needs and provided needed services. However, a smaller percentage (< 56%) of nurse practitioners frequently provided education regarding health promotion and self-management. Overall, participants implemented 7.6 (+ 1.1; range: 2-8) activities operationalizing holistic care most of the time (mean: 1.6 + 0.45; range: 0-2). Almost all participating nurse practitioners (> 95%) reported performance of the activities reflective of collaborative care, except exploring patients' preferences for who they want to be involved in their care, which was done by 92.4% of the respondents. Between 55% and 87% of participants carried out the activities frequently (> 4 days per week). Overall, nurse practitioners implemented 13.6 (+ 1.2; range: 5-14) collaborative care activities, most of the time (mean: 1.5 + 0.46; range: 0-2). A larger percentage of nurse practitioners individualized patient care (> 98%) than facilitated patients' access to community resources (94.4%), frequently. Overall, they implemented 6.7 (+ 0.50, range: 5-7) activities reflective of responsive care, most of the time (mean: 1.6 + 0.43; range: 0-2).

Table 2 Percentage of nurse practitioners reporting implementation of patient-centered care components

Type of clinical program	Percentage
Perio-operative, anesthesia, pain	7.3
Emergency	11.7
Labor and delivery	0.7
Ambulatory	4.4
General surgery	0.7
Pediatrics	4.4
Critical care (ICU, NICU, cardiac)	14.6
Specialized surgery (neuro, orthopedics, vascular)	8.8
Internal medicine	21.2
Mental health	0.7
Palliative care	3.6
Rehabilitation care	2.2
Geriatrics	13.9
Long-term care	5.8

PCC component and activities	Performance (%)	Frequency < 1 day	Frequency 2-3 days	Frequency > 4 days
HOLISTIC CARE				
Comprehensively assess patients' condition	98.6	4.3	15.0	80.7
Assess patients' knowledge of presenting condition	97.9	5.8	21.6	72.7
Assess patients' personal health values	97.1	8.7	27.5	63.8
Identify patients' health concerns	100	3.5	16.2	80.3
Monitor or reassess patients' needs	97.9	2.9	22.6	74.5
Provide services to patients	97.9	6.5	18.1	75.4
Discuss information regarding health promotion	97.8	12.9	30.9	56.1
Discuss information on self-management	93.1	14.2	40.3	45.5
COLLABORATIVE CARE				
	96.6	2.8	27.5	69.7

Factors influencing implementation of patient-centered care

Only one of the selected factors was found to be associated with nurse practitioners' implementation of PCC: years of experience. Experience was consistently related with performance of activities reflective of holistic care (β: 0.28, p: 0.01, adjusted R_2: 0.06), collaborative care (β: 0.21, p: 0.06, adjusted R_2: 0.05) and responsive care (β: 0.26, p: 0.02, adjusted R_2: 0.02). The relationship was positive and of a low magnitude; it implied that experienced nurse practitioners engaged in a large number of PCC activities. The remaining factors (i.e., education, clinical program and average number of patients assigned to the nurse practitioners' care) showed no statistically significant association with the implementation of holistic, collaborative and responsive care.

Discussion

This study is the first to examine the implementation of PCC, guided by a clear conceptualization and precise operationalization of this approach to care, thereby advancing the scientific utility of the concept of patient-centeredness [14]. The conceptualization of PCC was derived from a comprehensive and systematic review of pertinent literature. It identified 3 essential components of PCC, that is; holistic, collaborative and responsive care, which were also posited as characterizing PCC in similar analyses [8,9,18]. The conceptualization directed the operationalization of the PCC components into specific activities that were represented in the measure administered to the study target population. The measure has demonstrated content validity, supporting the relevance of the specific activities in capturing the respective PCC components. The results of this study provided initial evidence of the applicability of the activities in the context of day-to-day practice.

The overwhelming majority of the nurse practitioners reported that they engaged in almost all activities reflective of each PCC component, most of the time. Although these findings are highly subject to self-report bias, they are consistent with those obtained in studies that examined patients' perception of the nurse practitioners' care. In particular, nurse practitioners' implementation of holistic care has been identified as a key aspect of their role in the enactment of the Chronic Care Model of Disease Management; the nurse practitioners addressed the patients' concerns and barriers to adherence and arranged for access to needed services [5]. This is additionally demonstrated by their assessment and monitoring of symptoms, as well as their provision of information on the symptoms and symptom management strategies [35]; attendance to patients' educational [29], physical and psychosocial [31] needs and in getting to know patients as individuals and not just remaining content with a knowledge of the patients' disease profile alone [36]. In the present study, about half of the nurse practitioners indicated that they provide education regarding health promotion and self-management on a frequent basis, which differs from what has been reported in the literature [6]. The difference may be related to the context in which the nurse practitioners worked. Those participating in the present study were primarily assigned to internal medicine, critical care and geriatric units, whereas most previous studies included nurse practitioners employed in primary care settings. Patients in the former types of unit may have complex needs that should be well managed or may not be cognitively ready for education prior to discharge and may have a low turnover contributing to the low frequency of providing education to patients. Furthermore, the high turnover of patients may limit the time available for patient education. In contrast, patient education for chronic illness management is the focus in primary care visits.

The nurse practitioners' self-reported, frequent, implementation of collaborative care is comparable to others' description of the nurse practitioners' practices related to involvement of patients in their care and care-related decisions [30]. Specifically, nurse practitioners defined the healthcare goals and developed action plans in collaboration with patients presenting with chronic illnesses [4]; provided decision support to patients with chronic conditions [5] and encouraged patients' participation in their care [31]. This component of PCC appears to be highly valued by patients in different healthcare settings [10]. Similarly, the nurse practitioners indicated they frequently engaged in activities reflective of responsive care. This component of PCC has been commonly assessed in terms of the extent of individualizing healthcare. Nurse practitioners have been found to provide flexible, individualized care, that is compatible with the health condition, goals and life experiences of patients with chronic illnesses [4]; to listen actively to patients' concerns and to individualize care [29,31,36].

Despite some variability in measurement and in healthcare settings, the convergence of findings across studies confirms that nurse practitioners implement the 3 components of PCC in their day-to-day practice. Whether the implementation of the PCC components produces the positive outcomes of nurse practitioners' care and which of the 3 components is most influential, are topics requiring further investigation. The association between nurse practitioners' provision of holistic, collaborative and responsive care, in combination and patient-oriented (e.g., satisfaction with care, physical and psychosocial functioning, symptom management and self-management), clinical, safety and system outcomes should be examined to clarify the contribution of nurse practitioners' implementation of PCC within healthcare systems. In addition, the extent to which other healthcare professionals engage in the activities reflective of the PCC components should be explored to determine similarities and differences in their practices and to guide initiatives aimed to facilitate interprofessional collaboration in providing PCC.

The nurse practitioners' implementation of PCC was influenced by only one personal characteristic related to their years of experience. Experienced nurse practitioners reported engagement in a large number of activities capturing holistic, collaborative and responsive care. The specific mechanism explaining this relationship is not clear and demands further exploration. However, it is possible that with experience, nurse practitioners gain confidence in their technical and interpersonal skills that enable them to attend to the patients' multiple and complex needs, to use appropriate strategies to motivate patients' involvement in care and to tailor evidence-based treatments to the needs, characteristics and preferences of patients. This possible explanation is similar to the one proposed by Crits-Christoph and Mintz [37]. In their systematic review, these authors reported differences in the outcomes achieved by patients cared for by psychotherapists with varying level of experience; they suggested that less experienced therapists tend to adhere to structured treatment protocols and to implement treatments in a standardized manner.

It appears that nurse practitioners are capable of providing PCC in different clinical programs and regardless of the number of patients assigned to their care.

This is consistent with the nurse practitioners' training that focuses on negotiating healthcare delivery systems and managing barriers to the provision of high quality care [4].

Conclusions

The results of this study demonstrate that nurse practitioners implement PCC, conceptualized as consisting of 3 essential components: holistic, collaborative and responsive care. They enacted the specific activities operationalizing each component in their day-to-day practice, most of the time. The list of activities, available in the measure used in this study, can serve as a guide for training nurse practitioners in the delivery of PCC, for monitoring and evaluating their performance and for examining the impact of PCC on patient and system outcomes.

Acknowledgements and Conflicts of Interest

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