

Review Article

Continuity of care and quality care outcomes for people experiencing chronic conditions: A literature review

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Abstract

Continuity of patient care is frequently linked to quality care outcomes. The purpose of this paper is to examine the clinical trial literature in order to determine the extent to which informational, management, and relational continuity of care are associated with quality care indicators. A MEDLINE search of the literature via PubMed was conducted for clinical trials that were carried out from 1 January 1996–1 June 2005. Analyses of 32 unduplicated citations revealed a focus on one or more aspects of continuity and its association with quality care outcomes. Management continuity interventions were identified most often, followed by informational and relational continuity interventions. The outcomes were primarily patient-focused with a wide range of functional status, quality of life, and patient satisfaction indicators. This analysis provides implications for research that could contribute to an understanding of the types of continuity of patient care and their relationships to quality care.

Key words

continuity of patient care, disease chronicity, quality care.

INTRODUCTION

Health-care systems providing quality of care in the management of chronic disease and illness over protracted periods of time are difficult to design. The continuity of patient care is purported to be a critical feature of the processes of care necessary to ensure high-quality outcomes important to providers, as well as to patients and their family. Continuity of care is defined broadly as coherent patient care over time and setting. Various ways of defining continuity and a lack of consensus about what is meant by continuity of patient care led to problems in determining its contribution to quality care. Using a model differentiating the types of continuity of patient care improves the ability to link continuity with quality care outcomes. The purpose of this paper is to examine the clinical trial literature to determine the extent to which one or more of informational, management, and relational continuity of care are examined in relation to quality care indicators.

BACKGROUND

The concept of continuity of patient care has been linked with quality care. The literature addressing this linkage is found in studies of varied settings, from inpatient units,

extended care, hospice services, in family practice, and other outpatient settings. Table 1 provides a selective, but not exhaustive, list of literature summarizing the perspectives on the importance of the continuity of patient care.

The prevalence of chronic diseases and the likelihood that treatment generally occurs over a protracted period of time highlight the need to address issues about continuity of patient care and its impact on various quality care indicators. It is probable that not all chronic diseases, nor all individuals with such diseases, will require the same level of continuity of care. Nonetheless, the hypothetical linkages between the continuity of care and the quality of care in chronic disease management require considerable attention.

Definition of continuity of care

Continuity of patient care has been and continues to be associated with professional medical practice. Stokes *et al.* (2005) and Guthrie and Wyke (2000) assert that it is an official “core value” of primary care practice in the UK. According to Sparbel and Anderson (2000a; p. 17), it is “a fundamental tenet of professional nursing.” Continuity of patient care defined more broadly signifies “coherent health care with a seamless transition over time between various providers in different settings” (Biem *et al.*, 2003; p. 1). The management of services to achieve seamless transitions also has been referred to as “continuance of care” (Preen *et al.*, 2005), “continuum of care” (Wright *et al.*, 2001) or “continuing care” (McKay *et al.*, 2005). It has been described most often as either a structural dimension (Vrijhoef *et al.*, 2001; Kibbe

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Table 1. Literature reviews summarizing continuity of care and its relationship with quality care outcomes

Article citation	Location	Subject
Haggerty <i>et al.</i> (2003)	Montreal, Canada	Continuity of care: a multidisciplinary review. It develops a common understanding of continuity of care, a concept needing valid and reliable measurement in different settings.
Mainous <i>et al.</i> (2004)	Charleston, South Carolina, USA	Patient–physician shared experiences and the value that patients place on continuity of care. It reports on a study to examine the impact of shared experiences between patients and physicians and the extent to which patients value continuity of care.
Raddish <i>et al.</i> (1999)	Tulsa, Oklahoma, USA	Continuity of care: is it cost-effective? It examines the association between health-care provider continuity and health-care utilization and costs.
Saultz (2003)	Portland, Oregon, USA	Defining and measuring interpersonal continuity of care. A review of the medical literature on continuity of care in order to define interpersonal continuity and describe how it has been measured and studied.
Saultz and Albedaiwi (2004)	Portland, Oregon, USA	Interpersonal continuity of care and patient satisfaction: a critical review; interpersonal continuity of care and patient satisfaction: a critical review. It reviews the medical literature about the relationship of continuity of patient care (interpersonal continuity) and patient satisfaction and suggests implications for future research.
Sparbel and Anderson (2000a)	Moline, Illinois, USA	Integrated literature review of continuity of care: part 1, conceptual issues. A review to explore how continuity of care was studied and reported in the nursing literature from 1990–1995, with a focus on issues concerning conceptual definitions and associated factors, variables, and concepts.
Sparbel and Anderson (2000b)	Moline, Illinois, USA	A continuity of care-integrated literature review, part 2: methodological issues. A review to explore how continuity of care was studied and reported in the nursing literature from 1990–1995, with a focus on issues of design and methods.
Stewart (2004)	London, Ontario, Canada	Continuity, care, and commitment: the course of patient–clinician relationships. It discusses the literature in family medicine regarding the patient–clinician relationship, including the aspect of seeing the regular physician.
Stokes <i>et al.</i> (2005)	Leicester, UK	Continuity of care: is the personal doctor still important? A survey of general practitioners and family physicians in England and Wales, the USA, and the Netherlands. A report of the value that general practitioners/family physicians in three different health-care systems place on different types of continuity of care.

et al., 2004) or a process indicator (Beland, 1989; van der Weide *et al.*, 1999; Saultz, 2003).

In their review of 38 nursing research articles published from 1990–1995 on the topic of continuity of care, Sparbel and Anderson (2000a) reported that there was little consensus in the literature about the concept of continuity of care and concluded that it was a multifactorial construct affected by environmental influences, including professional provider and system factors. These factors may either be interrelated or tangential to the concept of continuity of care. In addressing the complexity of continuity of patient care, Guthrie and Wyke (2000) stated that there are at least two conflicting definitions of continuity. The first stresses the patient seeing the same health-care provider at each visit (personal continuity). The second stresses the consistency of care from the perspective of the organization, guidelines, and electronic medical records (care continuity), irrespective of whether the patient sees the same or a different provider. Biem *et al.* (2003) explains that, until recently, continuity of care meant being cared for by the same provider over time, but with the advent of regionalization and specialized health care, as well as multidisciplinary issues with the delivery of care, continuity of care means much more. Saultz (2003) speaks of a hierarchy of dimensions, including informational, longitudinal, and interpersonal continuity.

Similarly to Saultz, Haggerty *et al.* (2003) examined continuity, but with a multidisciplinary perspective. They identified informational, management, and relational (similar to interpersonal) continuity of care. Informational continuity refers to the “use of information on past events and personal circumstances to make current care appropriate for each individual” (Haggerty *et al.*, 2003; p. 1220). Management continuity refers to “a consistent and coherent approach to the management of a health condition that is responsive to a patient’s changing needs” (Haggerty *et al.*, 2003; p. 1220). Finally, relational continuity of care refers to “an ongoing therapeutic relationship between a patient and one or more providers” (Haggerty *et al.*, 2003; p. 1220). This dimension of relational continuity is said to be important because it provides the patient with a sense of predictability and coherence.

Haggerty *et al.* (2003) point out that management continuity is particularly important in chronic and complex diseases when care is provided by several providers who could potentially work at cross-purposes. They also explain that processes designed to enhance continuity, such as care pathways and case management systems, do not mean that continuity is in place. Rather, it is the experience of care as “connected and coherent” that signals the presence of continuity of patient care. Although continuity of care might remain elusive, the application of a typology aiding the specificity of the

definition is a major contribution to the continuity of patient care literature.

Chronic disease management

Systems of care that maximize the prevention and treatment of chronic diseases is high on the list of priorities of countries throughout the world and is likely to remain so for years to come. Many ministers of the World Health Organization's (WHO's) 192 member states recognize chronic disease as the major cause of death and disability worldwide (WHO, 2006). According to the WHO, chronic diseases, including cardiovascular diseases, obesity, cancer, and respiratory diseases, now account for 59% of the 57 million deaths annually worldwide and 46% of the global burden of disease. The effective management of chronic diseases requires a new set of skills, making it mandatory to partner with other systems of care and patients to achieve higher levels of service coordination.

Along these lines, Holman (2004) summarizes the differences in the approach to chronic diseases compared to acute episodic care. Acute episodic care is time-limited. The patients might be comparatively less knowledgeable and less experienced about their condition. There is frequently a "cure" and the patients return to their prior level of functioning. With chronic disease, the opposite is true. Chronic illness management is continuous. A full return to one's highest level of functioning might not be the result. According to Holman, the level of integration of the health-care system is integral to achieving the best possible outcomes and includes the patient's vital role in adhering to existing treatment regimens.

The rationale for focusing exclusively on patient care to individuals with chronic disease is that these individuals require a protracted period of care that is influenced by a multitude of patient-provider and system-level factors. Given the complexity of care delivery to many patients with chronic disease, it is generally understood that there might be many barriers to structuring care that enables optimal continuity despite the best efforts of providers and administrators.

Continuity of patient care and quality of care outcomes

Continuity of care is typically considered "a good thing" and something to be promoted in the design and delivery of health-care services. Continuity of care, defined as sustained contact with a primary provider, although disease-specific, it has been associated with the early diagnosis of chronic diseases (Koopman *et al.*, 2003), decreased hospitalizations (Gill & Mainous, 1998), and improved quality of care (Parchman & Burge, 2002). Gill and Mainous find that after controlling for demographics, the number of ambulatory visits, and case mix, higher provider continuity is associated with a lower likelihood of hospitalization for any condition. Parchman and Burge report that patients with type 2 diabetes who had seen their usual providers within the past year were significantly more likely to have had an eye examination, a foot examination, two blood pressure measurements, and a lipid analysis. In a follow up-study, as the length of the relationship

increased between the patient and provider, the scores on communication and accumulated knowledge of the patient from the physician and trust in the physician also increased (Parchman & Burge, 2003). Although equivocal, evidence of reductions in resource utilization and costs among Health Maintenance Organization patients receiving outpatient treatment for chronic illness also has been associated with continuity of care (Raddish *et al.*, 1999).

However, studies of the relationships between continuity of care and quality of care outcomes have revealed unexpected findings. Gill *et al.* (2003) state that although continuity might benefit some aspects of care for diabetic patients, provider continuity was not associated with the completion of diabetic monitoring (receipt of a glycosylated hemoglobin test, a lipid profile or an eye examination) in patients treated under a private national health plan. Pereira *et al.* (2003) find that a loss of continuity in care due to primary care practitioner turnover in a multidisciplinary group practice was not associated with the quality of care (screening examinations, glycemic control in diabetic patients, and blood pressure control in hypertensive patients) or the utilization of health-care services (ambulatory, urgent care, and emergency department visits).

In summary, more valued than not, the concept of continuity of patient care and its relationship to quality care outcomes remains somewhat confusing and complicated because of difficulties in defining continuity and understanding its relationships to the outcomes of care. The literature generally supports the application of continuity in the care and management of chronic disease. But, this is not the case in every instance. It has been posited, for example, that continuity of the patient-provider relationship is most important for patients with comorbid chronic conditions who need or use more visits and who cannot be easily engaged in their treatment plan. It could be argued that the continuity of a single provider or provider team (relational continuity) is unnecessary for some and impractical to maintain over time. Guthrie and Wyke (2000), summarizing the literature on continuity of care and quality care outcomes, warned that current attempts to reorganize care delivery systems with an emphasis on technology to promote the development of general practice might have reduced continuity.

The application of a paradigm of the types of continuity may contribute to an understanding of the concept. In addition, its associations with quality care outcomes might be recognized. The purpose of this paper is to determine from the literature the extent to which informational, management, and relational continuity of care are associated with quality care indicators. The research questions are: (i) What is the frequency of studies examining the relationship of continuity of care and quality of care in the clinical trial literature and in nursing journals in particular?; (ii) Which types and combinations of continuity of care strategies are addressed in this literature?; (iii) Which quality of care indicators are associated with continuity of care-enhancing strategies or programs?; and (iv) Which recommendations for future research emanate from this literature review that addresses the relationships between continuity of patient care and quality care outcomes?

METHODS

In order to examine the literature for the types of continuity of patient care and associated quality care outcomes, a MEDLINE database search via PubMed was performed along with a systematic review of the literature. Systematic reviews are similar to but different from meta-analyses, which combine the evidence of multiple primary studies by employing statistical methods (Whittemore & Knafl, 2005). Systematic reviews also combine evidence from multiple studies. However, when primary studies cannot be combined statistically, a narrative analysis is undertaken. They typically include a synthesis summary of the work related to a particular research question. Unlike meta-analyses, they do not include the application of measurement and statistical tests to analyze combined data (Broome, 2000). The approach was based upon the guidelines adopted by Sparbel and Anderson (2000a,b) and included:

- 1 Formulating the purpose and questions.
- 2 Establishing tentative inclusion and exclusion criteria that may be changed to some extent at a later time.
- 3 Conducting the literature review using inclusion and exclusion guidelines.
- 4 Designing a data-collection measure.
- 5 Identifying the rules of inference for data analysis and interpretation.
- 6 Revising the data collection instrument as needed.
- 7 Reviewing the articles based upon the data collection or data summary measure.
- 8 Analyzing data in a systematic way to reflect the purpose and questions of the search.
- 9 Discussing and interpreting the findings of the search.
- 10 Reporting the results of the review and analyses as clearly and completely as possible.

To conduct a review of the clinical trial literature, the following questions guided the systematic review: (i) What was the purpose of the study?; (ii) How was the intervention(s) described?; (iii) What were the characteristics of the setting and sample in which the clinical trial was conducted?; (iv) Which type(s) of continuity of care was addressed?; and (v) What were the outcome variables?

The general subject heading was "continuity of patient care." An additional subject heading guided the search because of the purpose and research questions and included "continuity of patient care and quality of care." The search was limited to citations in the English language but was not limited to articles only in nursing journals because continuity of patient care is a concept of importance to a broad range of medical providers and clinical settings. First, the search was open to all fields. Then, a separate nursing journal search was conducted to specifically ensure that nursing articles were not missed in the initial search. The decision to focus on the clinical trial literature was purposeful. It was expected that this literature would more likely include data on the relationships of continuity of care and quality of care. Building on the nursing literature knowledge base reported by Sparbel and Anderson (2000a) from 1990–1995, this review focused on citations listed from 1 January 1996–1 June 2005.

These parameters were expected to generate an updated review and reflect a broad range of professional views on the continuity of patient care and its impact on quality care outcomes. Before closing this phase of the search process, the previous inclusion criteria were examined. Titles and abstracts from the original search were scanned and used to modify the inclusion and exclusion criteria. For example, "care continuance" was determined to be similar in meaning. Articles were included if they referred to "continuance of care" (Preen *et al.*, 2005), "continuum of care" (Wright *et al.*, 2001), "continuing care" (McKay *et al.*, 2005), "transmural care" (Smeenk *et al.*, 1998), "transitional care" (Naylor *et al.*, 2000), "transitional discharge model" (Reynolds *et al.*, 2004), "transitional coordinator" (Crotty *et al.*, 2004), "hospital-to-home transmission" (Harrison *et al.*, 2002), "integrated care" (Fagerberg *et al.*, 2000), and "longitudinal nursing case management" (Blaha *et al.*, 2000). Finally, a reference to "shared care" (Byng *et al.*, 2004) was included in the database. Articles addressing "caregiver consultations" were eliminated. Before closing the search, the following question was posed to determine if there were any further citations not identified in the initial search process: "Does continuity of patient care improve quality of care?" The results revealed no additional citations.

The citations from these searches were entered into a bibliographic database. First, the abstracts of these articles were obtained. Then, the full texts of the articles were obtained and added to the database. A data-collection measure was designed that consisted of an abstract format useful in summarizing research data. It included the:

- 1 Purpose of the study.
- 2 Design of the experimental intervention, strategy or program.
- 3 Study population and setting.
- 4 Type of continuity of care that was studied (informational, management, and relational continuity of patient care).
- 5 Major quality care outcome variables.

This format was used to guide the review of each clinical trial publication and the following rules of inference for data analysis and interpretation were used:

- 1 Where possible, the author's own description of these study elements in the abstract was used.
- 2 When the parameter was not included in the abstract or was not clearly described by the author(s), the parameter was assigned by the description in the text of the article. For example, if the purpose of the study was not stated, the determination of research purpose and aims was assigned by reviewing the introduction to the study and cross-checking with the organization of the results section.

3 All of these citations were listed as clinical trial articles so the emphasis was not placed on the design. However, a description of the kind of clinical trial was provided.

The data-collection procedure included separate reviews by three nurse faculty researchers. All reviewers had research experience and were knowledgeable about the continuity of patient care and/or quality of care literature. The definitions and descriptions by Haggerty *et al.* (2003) were used to guide the analyses. The reviewers discussed the meaning of the

different subtypes and how they would be differentiated in the actual research studies. These reviews were examined for their level of agreement. Interrater reliability can be used in any situation in which two or more independent raters are evaluating the same thing, in this case, the kind of continuity described in the clinical trial articles. Interrater reliability was calculated for each pair using Cohen's Kappa coefficients to determine whether agreement exceeded chance levels. The Kappa coefficient is the most commonly used statistic for the purpose of determining whether agreement exceeds chance. The percentage of agreement between raters ranged from 72–81% (raters 1 and 2, 81%; 2 and 3, 72%; 1 and 3, 74%). The Kappa coefficients reached a moderate range, from 0.44–0.60 (raters 1 and 2, 0.60; 1 and 3, 0.48; 2 and 3, 0.44). The coefficients were acceptable. Additionally, the percentage agreement within each type of continuity across raters was calculated.

Disagreements among the raters included problems with distinguishing between the different types of continuity. When further discussed, these differences were resolved. For each identified type, they provided a rationale. Additionally, when changes were made, a rationale for each change in designation was given that needed to be supported by all reviewers. The final result represented a consensus about the different types of continuity addressed in all studies.

Descriptive statistics (frequencies and percentages) were used to summarize the data on the type of continuity of care and the categories of outcome measures. In selected instances, qualitative analyses were used to extract themes or definitions about the concept of continuity of patient care described in these articles. For example, descriptors of the types of continuity of care were extracted from the literature. The following results and discussion present as comprehensively as possible the findings of the review and subsequent conclusions and implications for future research.

RESULTS

The following analyses summarize the number of articles obtained in the MEDLINE database via the PubMed search, the types of continuity of care addressed in the intervention, and the outcome measures as reported in these clinical trial articles. Each search was conducted within the following limits:

- 1 Articles about continuity of patient care in all journals (unspecified type).
- 2 Articles about continuity of patient care in nursing journals.
- 3 Articles describing the relationship between continuity and quality of care in all journals (unspecified type).
- 4 Articles describing the relationship between continuity and quality of care in nursing journals.

The number of articles in response to the search term "continuity of patient care" was considerable. In the MEDLINE database search, 3827 articles addressing the subject of continuity of patient care were identified (29 July 2005); however, only 137 articles were classified as clinical trials. Also, considerably fewer articles were cited when specific subcategories were used. Narrowing the search to "continuity of

patient care and quality patient care" produced significantly fewer articles ($n = 1009$); only 43 were classified as clinical trials.

Similar patterns were revealed when the MEDLINE database search was limited to nursing journals. "Continuity of patient care" revealed 970 articles; 28 were cited as reports of clinical trials. A yield of 272 nursing journal articles were found using the search term "continuity of patient care and quality of care", with only 10 being clinical trials. From the base of 43 and 10, or 53, 18 were removed. Ten of these were removed because they were duplications. The remaining eight were dropped for the following reasons: continuity of care was treated as the only dependent variable in two articles, only the design and intervention without the results were offered in three articles, the target population was either the family or professional caregiver and the effects on the patient were not reported in two papers, and the intervention focused only upon the recruitment of patients to the study in one paper. These steps led to a database of 35 unduplicated reports. After a further full-text review, another three articles were removed (two of the three were reports of initial enrolment, the other briefly described two studies in one paper). Thus, the final database consisted of 32 unduplicated reports of selected clinical trials in the literature from 1 January 1996–1 June 2005. Although nearly three-quarters ($n = 23$, 71.88%) of the articles originated (according to the corresponding address of the principal investigator) from the USA ($n = 12$), the UK ($n = 5$), Canada ($n = 3$), and Australia ($n = 3$), the literature revealed a wider range of countries engaged in continuity studies (the Netherlands, $n = 4$, 12.5%; Spain, Norway, Denmark, Finland, and Sweden each, $n = 1$, 3.13%).

Interventions to improve continuity and quality of care

Interventions, strategies or programs in these clinical trials were often designed uniquely for the population of interest. For example, increasing mobility and reducing falls in medication management was planned for elderly patients awaiting transfer to a long-term residential care facility for the first time (Crotty *et al.*, 2004). A quality improvement program to improve the communication between the teams and systems of care within general medical practice was designed for patients at risk for psychiatric relapse (Byng *et al.*, 2004). The majority of interventions included two or more approaches to improve quality care. Three studies (Evans *et al.*, 1997; van der Weide *et al.*, 1999; van Eaton *et al.*, 2005) were aimed at impacting continuity with the expectation that it would improve quality care outcomes.

Categories of continuity

As previously specified, the types of continuity examined here were informational, management, and relational. The data revealed that management continuity was evidenced in all of the studies, followed by informational ($n = 21$, 65.63%), and relational continuity ($n = 14$, 43.75%). However, in nearly all of the studies ($n = 29$, 90.63%) focusing on management continuity, one other type of continuity was also

Table 2. Studies addressing all types of continuity of patient care and quality care in relation to clinical trials (1 January 1996–1 June 2005 [*n* = 32])

Article citation and location	Study purpose and design	Intervention	Study population/setting	Continuity of care categories	Major outcome variables
Harrison <i>et al.</i> (2002) Kingston, Ontario, Canada	Randomized trial to examine the effectiveness of hospital-to-home transitioning care program	Nurse-led intervention focusing on the transition from hospital-to-home and supportive care for self-management 2 weeks after hospital discharge	Patients hospitalized for heart failure transferring to home care	Informational: Nursing transfer letter to the home-care nurse detailing patients' clinical status Management: Hospital-to-home transition program to increase the coordination of care to improve the methods and processes of discharge care of heart failure patients Relational: Continued relationship with nurse after discharge, phone outreach call by hospital nurse to patient within 24 h of discharge home	Disease-specific quality of life, generic quality of life, rates of hospital readmission, emergency room use
Naylor <i>et al.</i> (2004) Philadelphia, PA, USA	Randomized, controlled trial to examine the effectiveness of a transitional care intervention delivered by advanced practice nurses to elderly with heart failure	A follow-up postindex hospital discharge to patients, 3 month advanced practice, nurse-directed discharge planning and home follow-up protocol	Academic and community hospitals; elderly patients hospitalized for heart failure transferring to home care	Informational: Collaboration with physicians, major focus of advanced practice nurses was to provide input to nursing staff regarding the discharge needs of patients, face-to-face interactions with patient's physician during hospitalization and initial discharge visit Management: Program to follow up with specially trained advanced practice nurses within 24 h of discharge Relational: Visits were conducted with the same three nurses	Time to first readmission or death, number of readmissions, total costs, short-term improvements in quality of life, patient satisfaction
Neilsen <i>et al.</i> (2003) Aarhus, Denmark	Randomized, controlled trial to determine the effect of a shared-care program on the attitudes of newly referred cancer patients towards the health-care system; health-related quality of life	Shared-care program included transfer of knowledge from the oncologist to the general practitioner, improved communications, and active patient involvement	Cancer patients referred to a university department of oncology practice	Informational: Transfer of knowledge of patient needs from oncologist to general practitioner (GP), discharge summary letters and information sent to the patient's GP Management: Shared care program with three elements: knowledge transfer, communication channels, and active patient involvement Relational: Intervention group had more contact with their GPs, provided one more confidante	Attitude towards the health-care system, patients' perception of cooperation between primary and secondary health-care sectors (GPs' knowledge of their disease and treatment), number of contacts with GP Health-related quality of life, performance status

Roy-Byrne <i>et al.</i> (2001) Seattle, WA, USA	Randomized effectiveness trial of a collaborative care program for panic disorder patients in primary care	Collaborative care intervention included educational videotapes and pamphlets, pharmacotherapy, psychiatrist visits and telephone calls within the first 8 weeks, and up to five telephone calls between 3 and 12 months follow-up versus the usual care for patients treated by their primary care physician	Patients with panic disorder from primary care clinics	Informational: Collaborative care intervention Management: Intervention program included a multimodal approach with education, psychiatrist visits, telephone calls, and psychopharmacological intervention Relational: Continued contact with psychiatrist	Adequate type, dose, and duration of medication regimen, adherence to medication regimen, level of anxiety, depression, and disability over time
Simon <i>et al.</i> (2002) Seattle, WA, USA	Design of a randomized trial evaluating systematic program to improve the quality and continuity of care for bipolar disorder	Multifaceted program including a collaborative treatment plan, monthly telephone monitoring by a dedicated nurse manager, feedback from monitoring of results, and algorithm-based medication recommendations for treating mental-health professionals, as needed outreach and care coordination, and a structured psycho-educational group program delivered by a nurse case manager	Population-based sample of patients with varying levels and subtypes of mood disorders	Informational: Collaborative treatment plan to enhance sharing of information about patients Management: Program with multifaceted interventions to enhance coordination of care Relational: Monthly telephone monitoring by dedicated nurse manager	Acceptance of regular telephone monitoring, contact with nurse case manager, completion of Life Goals Program, attendance at structured group sessions
Smeenk <i>et al.</i> (1998) Eindhoven, the Netherlands	Quasi-experimental design to evaluate the impact of a transmural home care intervention program designed to optimize coordination and thereby improve continuity of care	Coordination of care or care not stopping at the walls of the hospital but adapting to the needs of the patient and occurring before, during, and after the hospital stay, program directed at optimizing communication, cooperation, and coordination, intramural and extramural health care	Terminal cancer patients receiving home care	Informational: Patients' wishes and care needs are assessed by the specialist nurse coordinator and communicated to the extramural care providers, patient information available to 24 h phone responders regarding patients via home-care dossier Management: At the program level, to provide transmural home care as a way of eliminating gaps in terminal patients' discharge from hospital and monitoring of care at home by complementing, not duplicating, existing services through information-sharing and phone support Relational: Continuity of care by the specialist nurse before, during, and after hospitalization	Rehospitalization, quality of life, place of death for terminal patients

addressed. Thus, in very few studies was management addressed alone. This is to be contrasted with none of the studies focusing on informational or relational continuity only.

The frequency with which relational continuity was identified was considerably less than that for management. Relational continuity did not appear alone and was always accompanied by management and/or informational continuity.

Continuity and major outcome measures

The categories of outcome variables included patient, resource consumption, system characteristics, and provider influence. Virtually all focused on some aspect of impacting patients' health status and/or their satisfaction with care. Quality of life (either generic or disease-specific) was a frequently cited outcome measure (Smeenk *et al.*, 1998; Grunfeld *et al.*, 1999; Fagerberg *et al.*, 2000; Keitz *et al.*, 2001; Moher *et al.*, 2001; Williams *et al.*, 2001; Harrison *et al.*, 2002; Neilsen *et al.*, 2003; Samet *et al.*, 2003; Cowan, 2004; Fjaertoft *et al.*, 2004; Naylor *et al.*, 2004; Reynolds *et al.*, 2004; Preen *et al.*, 2005). Others addressed patient well-being and/or health status measures. For example, indicators included: (i) patient satisfaction and well-being, unmet needs, and health status (Byng *et al.*, 2004); (ii) symptom severity and symptom relapse (Atienza *et al.*, 2004; Fjaertoft *et al.*, 2004); (iii) adverse events (Atienza *et al.*, 2004; Crotty *et al.*, 2004); and (iv) worsening condition or mobility (Crotty *et al.*, 2004).

Of those studies addressing the costs of care, some focused on the nature and magnitude of resource use, such as the overall or total direct costs of care (Druss & Rhohrbaugh, 2001; Atienza *et al.*, 2004; Byng *et al.*, 2004). Others addressed hospital, urgent care or emergency visits, the number and causes of readmissions (Smeenk *et al.*, 1998; Kietz *et al.*, 2001; Harrison *et al.*, 2002; Atienza *et al.*, 2004; Cowan, 2004; Reynolds *et al.*, 2004), the extent and speed of communications between the hospital and practitioner (Preen *et al.*, 2005), hospital length of stay (Preen *et al.*, 2005), and efficiency or the number of patients missed on rounds (van Eaton *et al.*, 2005). Provider or caregiver factors (when associated with patient outcomes) were infrequently mentioned but included caregiver strain (Fjaertoft *et al.*, 2004), communication and coordination of activities (van Eaton *et al.*, 2005), processes of care (Byng *et al.*, 2004), caregiver satisfaction (Byng *et al.*, 2004), physicians' use of experimental intervention strategies or programs (Williams *et al.*, 2001), and physicians' knowledge of patient's disease and treatment (Neilsen *et al.*, 2003). There was no single pattern of outcome measurement. The patient outcomes were examined most often followed by some measure of resource consumption. None of the studies looked at the indirect costs or loss of income associated with continuity of care. Only one occupational rehabilitation study looked at the return to work of patients with low back pain (van der Weide *et al.*, 1999).

Analyses of those studies addressing all three types of continuity (informational, management, and relational) revealed only six studies of this kind. A listing of these studies and analysis of types of continuity are found in Table 2. A focus

on the transition from hospital to home care was found in half of these studies (Smeenk *et al.*, 1998; Harrison *et al.*, 2002; Naylor *et al.*, 2004). A focus on shared care at the level of outpatient services was found in the remaining studies (Roy-Byrne *et al.*, 2001; Simon *et al.*, 2002; Neilsen *et al.*, 2003). The role of the nurse seemed to be integral in at least two of the studies. The quality of life or some measure of patient functioning was addressed in most studies.

DISCUSSION

The continuity of patient care, where care is both coherent over time and setting, is purported to be a critical feature of the processes of care necessary to ensure high-quality outcomes. Furthermore, organizing care to enhance coordination and continuity is believed to be critical and paramount in both the nursing (Sparbel & Anderson, 2000a) and medical professions (Guthrie & Wyke, 2000; Stokes *et al.*, 2005). Although few would argue with the need to enhance continuity in order to provide a high quality of care, providing and ensuring continuity places considerable pressure on the systems of care, especially those services extending over protracted periods of time, as in the case of managing chronic disease and illness. Sufficient documentation of the relationship of the continuity of patient care and quality care outcomes is necessary to support efforts to ensure continuity of any type in the management of chronic disease and illness. With insufficient documentation of the relationship, direction, and reasons that continuity of patient care is associated with quality, this mandate might not be adequately addressed.

Despite that the literature exploring the role of continuity of patient care in the delivery of quality care continues to grow, as evidenced in the articles revealed in a MEDLINE database search of the literature, the clinical trial literature addressing this important aspect of patient care is meager. Only 32 full reports of studies over an 8.5 year period of time were located using specified review guidelines. The literature at large supports the relationships between continuity of care and patient satisfaction with care and provider, early diagnosis of patient conditions, improved compliance to treatment, and reduced resource consumption. It is safe to say that investigations of these relationships require further attention. The issue of which comes first is important in understanding the association of continuity and quality. Certain aspects of continuity might be the result of quality of care outcomes (e.g. patient satisfaction and adherence to treatment) and might not be the cause of quality care. In fact, few studies clearly demonstrated that, by increasing continuity, quality care would be improved.

The literature review clearly indicated that continuity of care strategies or programs were multimodal. Continuity was considered in the context of many factors that influence quality care. As continuity of care was addressed as one aspect in a host of others, it appeared that researchers did not think that continuity operated in isolation from other important features of care.

As reported in some of these studies, if interventions take into account the impact of continuity on patients' perceived

control over their care, their greater involvement in decision-making, and having more information about their illness and its treatment, then its relationship to quality care is further established. No literature was found examining the mediating effects of these factors on quality care outcomes. Neither were there studies that examined the relative influence of continuity over many other factors that influence quality care outcomes. Additionally, as continuity can be conceptualized as different types, randomized, controlled trials to examine the effects of different types of continuity might be needed. It should be noted that isolating and testing different types or combinations of continuity strategies might not be practical or desirable. In the real world of designing and testing interventions or programs, it is more likely that interventions are complex and cannot be tested using a narrow definition of continuity. Effectiveness studies have to be feasible and flexible enough to be relevant to the "real world" environment where people are treated, yet defined and structured enough to be reliable and sufficient in detail to allow for replication. In this review, the majority of studies used two or more types of continuity and frequently relied on the coordination of care or management continuity as an aspect of the continuity intervention strategy or program. No systematic assessments of the processes were made to allow for determining which components in these multimodal interventions were effective; however, this would seem to be another direction for future research. It could be said that management continuity was an integral part of any form of continuity, as if it was not present, neither informational nor relational continuity would be possible.

This analysis was conducted with a computer-generated literature review directed at prospective, randomized clinical trial studies. It is possible that descriptive correlational studies would add a unique focus, addressing many more or different continuity types and a wider range of outcomes not represented in this targeted review. The search did not include proceedings and presentations, which sometime serve as an additional, more inclusive set of resources. There was the possibility that the identification and labeling of continuity types and study outcomes were hampered for the following reasons. First, in the labeling of types of continuity, some types could have been present but not clearly described by the author(s) or were so difficult to extract that they were not accounted for in the analysis. It should be noted that a description of a measure of continuity of patient care was rarely given despite the fact that, according to the review, continuity was an important deciding factor influencing the study outcomes in these multimodal intervention studies. Overall, interrater agreement (Kappa statistics) indicated that the reviewers were in agreement on the types of continuity represented in these research studies. The Kappa coefficient calculation was based on the difference between how much agreement was actually present compared to how much agreement would be expected by chance alone. The interpretation of the coefficients indicated that there was a moderate level of agreement. The level of agreement between two of the investigators was better than that between a third rater, but all pairs reached acceptable levels. To further address the clarity of categories, new and distin-

guishing aspects of these types of continuity should be added. In certain instances, the outcomes addressed in study abstracts did not encompass all those outcomes reported in the text of the paper, leaving the possibility that some outcomes might not be included in the summary. The review of the full text of the article was essential but still left the possibility that there would be some level of ambiguity in the identification of quality care outcomes. The subtle differences require close attention and discriminatory observation.

In the course of answering questions about which types of continuity and which outcomes have been studied, the important area of defining what is meant by each type of continuity and establishing its value to patient care is necessary. In some discussions addressing the question "Does continuity really matter?", a distinction is drawn between personal or relational continuity and the continuity that is achieved through the coordination of care and the use of appropriate guidelines and electronic medical records (Guthrie & Wyke, 2000). Unless they are a focus of specific research, it could be argued that informational, management, and relational continuity are equally important in enhancing quality care. However, management continuity is a unifying dimension, as indicated by the findings in this systematic review of the literature. In the reviewed clinical trials, management continuity could be addressed without informational or relational continuity but neither relational nor informational continuity were addressed without management continuity. In summary, there is evidence in the literature that continuity matters, but less is known about how it interacts with the other dimensions important to the delivery of quality care. In this paper, the quality of the study design and the strength of the findings were not evaluated. The focus was an integrative review rather than a meta-analysis. Thus, the empirical link between the continuity of patient care and quality care outcomes needs to be more thoroughly explored.

Another important area of future research is the question of whether continuity is needed equally for all patient populations. Along these same lines, is continuity a clinical necessity or a patient preference or both? Reynolds *et al.* (2004) explain that such systems might be more beneficial to those whose social network is not strong, particularly if health providers are the main source of support for patients. As evidenced in the review of the literature, a number of articles addressed continuity of care with populations having a greater need for continuity of care, particularly in the absence of a regular source of informal caregiving. The idea that continuity-enriched programs might be both more important and appreciated for some, but not all, is an important question. Populations in need due to comorbidity and limited self-care (and care from informal caregivers) seem to warrant more continuity-enhancing interventions. In principle, the more clinically complex the case becomes, the higher the likelihood that a continuity-enriched program is essential to achieve quality care.

Currently, there are a number of structural arrangements to enhance the continuity and quality of care. Among these is the provision of continuity in the context of specialist treatment to maximize each dimension or care condition being addressed adequately. These arrangements are a modern

group practice fashioned after a hospital with a large multidisciplinary team and what Guthrie and Wyke (2000) refer to as the small team approach. These continuity arrangements constitute a compromise between the "single-handed" practice and the "polyclinic" approach, where small, multidisciplinary teams are assigned to a specific caseload of patients with complex chronic illness conditions, frequently entailing mental health, behavioral health, and lifestyle changes. The expected outcomes under these arrangements could have a more powerful impact on patients' overall functioning and quality of life. Which systems would value such an approach and whether this approach is even feasible in some resource-poor countries is not clear.

In summary, the exact ways in which continuity affects quality care, which types, and for whom are still questions to be addressed in future research. Along these lines, which aspects of continuity of care are valued, what are the benefits of different types of continuity, and how do the answers to these questions differ depending upon the patient population warrant further consideration. This literature review identified clinical trial studies that examined the association between continuity and quality care in an attempt to determine whether and to what extent the types of continuity were studied. This paper addressed the literature in the area of continuity and quality of care, not restricting the literature search to articles in nursing journals only. By "casting a wide net" with a multidisciplinary review, yet focusing on the clinical trial literature, new and important insights emerged about continuity and its relationships to quality care outcomes.

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