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Primary care team communication networks, team climate, quality of care, and medical costs for patients with diabetes: A cross-sectional study☆

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ABSTRACT

Background: Primary care teams play an important role in providing the best quality of care to patients with diabetes. Little evidence is available on how team communication networks and team climate contribute to high quality diabetes care.
Objective: To determine whether primary care team communication and team climate are associated with health outcomes, health care utilization, and associated costs for patients with diabetes.
Methods: A cross-sectional survey of primary care team members collected information on frequency of communication with other care team members about patient care and on team climate. Patient outcomes (glycemic, cholesterol, and blood pressure control, urgent care visits, emergency department visits, hospital visit days, medical costs) in the past 12 months for team diabetes patient panels were extracted from the electronic health record. The data were analyzed using nested (clinic/team/patient) generalized linear mixed modeling.
Participants: 155 health professionals at 6 U.S. primary care clinics participated from May through December 2013.
Results: Primary care teams with a greater number of daily face-to-face communication ties among team members were associated with 52% (rate ratio = 0.48, 95% CI: 0.22, 0.94) fewer hospital days and US$1220 (95% CI: −US$2416, −US$24) lower health-care costs per team diabetes patient in the past 12 months. In contrast, for each additional registered nurse (RN) who reported frequent daily face-to-face communication about patient care with the primary care practitioner (PCP), team diabetes patients had less-controlled HbA1c (Odds ratio = 0.83, 95% CI: 0.66, 0.99), increased hospital days (RR = 1.57, 95% CI: 1.10, 2.03), and higher healthcare costs (β = US$877, 95% CI: US$42, US$1713). Shared team vision, a measure of team climate, significantly mediated the relationship between team communication and patient outcomes.

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Conclusions: Primary care teams which relied on frequent daily face-to-face communication among more team members, and had a single RN communicating patient care information to the PCP, had greater shared team vision, better patient outcomes, and lower medical costs for their diabetes patient panels.

What is already known about the topic?

- Team-based diabetes care is associated with better patient health outcomes, lower risk for diabetes complications, and lower health care costs for patients with diabetes.
- The role of primary care team communication and team climate in delivering high quality diabetes care has not been fully explored.

What this paper adds

- Primary care teams with frequent daily face-to-face communication among more team members have fewer hospital visit days and lower healthcare costs per team patient with diabetes.
- Single nurse-to-clinician communication patterns are associated with better diabetes patient outcomes than multiple nurse-to-clinician communication networks.
- Shared team vision, a measure of team climate, is a mediator in the link between primary care team communication and diabetes patient outcomes.

1. Introduction

Delivering evidence-based high-quality care for patients with diabetes (Type 1 and Type 2), a leading cause of morbidity and mortality, is a challenging public health issue. Prevalence of diabetes is 9.6% in the US population, being disproportionally high among the elderly (Cowie et al., 2010). The economic costs of diagnosed diabetes in the US are US$245 billion per year (American Diabetes Association, 2013).

Collaborative primary care teams are a key component of health care initiatives for chronic illness prevention and management (Griffiths et al., 2011; Noel et al., 2013). Team-based diabetes care leads to better glycemic, lipid and blood pressure control, patient follow-up, patient satisfaction, lower risk for diabetes complications, better quality of life, and lower health care costs (Haase and Russell, 2006; Litaker et al., 2003; Renders et al., 2001; Siminerio et al., 2005; Solberg et al., 2007). A meta-analysis of 66 diabetes intervention studies revealed that team-based interventions demonstrate the most robust improvements in patients' glycemic control (Shojania et al., 2006).

While emerging consensus shows that primary care teams play an important role in providing the best quality of care to patients with diabetes, little evidence exists on how teams communicate about patient care and how team climate contributes to a team's capacity to deliver high quality diabetes patient care. Communication within the team could influence diabetes patient outcomes through team coordination (i.e., management of interdependent but distinct activities involved in care provision) (DeChurch and Mesmer-Magnus, 2010; Rau, 2005; True et al., 2014; Zhang et al., 2007). Furthermore, a team's communication may contribute to the development of trust among team members performing distinct roles and provide the ability to deal with complex tasks. In addition, better communication may foster better team climate, where shared team vision and common goals contribute to patient outcomes, patient satisfaction and quality of care (Brazil et al., 2010; Crabtree et al., 2010; Finley et al., 2013; Lanham et al., 2009; Mitchell et al., 2012; O'Malley et al., 2014; Roblin et al., 2011; Safran et al., 2006; Sinsky et al., 2013; Stevenson et al., 2001; Van Bogaert et al., 2014). From this vantage point, teams which are more highly interconnected through timely communication may be best suited to meet the diverse needs of patients with diabetes.

This paper evaluates the patterns of primary care team communication (i.e., communication networks) in relation to team climate, patient outcomes, and associated healthcare costs for the team's diabetes patient panels. The study's theoretical model is based on the well-regarded Donabedian Structure–Process–Outcome model of health care quality (Donabedian, 1988). Fig. 1 provides a simple schematic of pathways to be assessed in this study based on the Donabedian model. We assess team communication in the "Structure" model component. We estimate team climate as a mediator of team structure in the "Process" model component. Patient outcomes, health care utilization and associated medical costs for diabetes patient panels of the team constitute the "Outcome" model component.

2. Methods

2.1. Participants

Six primary care clinics associated with a large Midwestern University participated in the study. Study sites were chosen based on consultation with the leadership of the health care system to obtain clinics that varied in location, size, and urban/rural location. Sites invited to participate were non-residency-based primary care clinics that were not currently involved in other research or quality improvement initiatives initiated by the leadership of the health care system. A total of 8 primary care clinics were invited and 6 clinics agreed to participate. The two clinics that refused participation did so for reasons of short staff and timing constraints.

Among the participating clinics, two were urban clinics, 3 suburban, and 1 rural. All participating clinics had used Electronic Health Records (EHRs) for more than a decade.