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Applying the Chronic Care Model to Improve Patient Activation at a Nurse-Managed Student-Run Free Clinic for Medically Underserved People

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Abstract

This article describes a practice change intended to improve patient activation, also described as self-care management, in a sample of uninsured and underinsured patients with one or more chronic diseases who received care at a nurse-managed student-run free clinic project. Chronic diseases are the leading causes of death and disability in the United States. Individuals with chronic illnesses may be uninsured or underinsured and often do not receive adequate medical management, resulting in complications and unnecessary hospitalizations. Lack of knowledge related to self-care has been identified as one risk factor associated with poor health outcomes in medically underserved populations. Student-run free clinics have emerged to provide care to groups that would otherwise not receive health care while simultaneously providing experiential learning for healthcare students. Guided by the Chronic Care Model, an intervention was designed to improve patients' self-care management and chronic disease care delivery offered by the family nurse practitioner and baccalaureate nursing students. The evaluation plan for the Patient Activation Intervention utilized a pretest–posttest design. The Patient Activation Measure tool was administered at the beginning and end of the intervention. Additional outcomes were evaluated using a chart audit tool. A total of 19 unique patients, representing 42 free clinic visits, were evaluated during the intervention period. The mean Patient Activation Measure score was 60.95 (standard deviation ± 12.03) and was indicative of a good foundational understanding of chronic illness and working toward self-management. Chi-square and Fischer's exact test statistics demonstrated a statistically significant ($p < .05$) difference in the documentation of medication reconciliation, patient-centered goals, and self-management education from baseline to post intervention follow-up appointments. The evidence-based Patient Activation Intervention demonstrated promise as an effective method to increase patient's self-care management and improve patient-centered outcomes for underserved patients when delivered at a nurse-managed student-run free clinic.

Keywords

chronic illnesses, health promotion, nursing student, primary care, self-management

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Introduction/Background

Chronic disease has been defined as an incurable, life-long, ongoing illness that can be managed medically (Center for Managing Chronic Disease, 2019). The Centers for Disease Control and Prevention (2019) has estimated that 6 of 10 Americans have at least one or more chronic health conditions. Approximately 60

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million Americans have multiple chronic health conditions defined as two or more chronic illnesses (Ward, Schiller, & Goodman, 2014). Individuals with chronic health conditions often do not receive adequate medical management (Ward et al., 2014), resulting in complications and unnecessary hospitalizations. Emergency department (ED) overutilization can occur when patients do not seek care for their chronic health conditions when early warning signs appear. These nonurgent ED visits cost the U.S. health care system between $47 billion and $240 billion annually (Ondler, Hegde, & Carlson, 2014).

Many people with chronic illnesses are uninsured or underinsured and lack access to quality health care (Sabik & Dahman, 2012; Thomsen, 2015), which further exacerbates their disease and ability to maintain optimum health and functioning. Student-run free clinics emerged to bridge the gap in the lack of access to healthcare services for vulnerable and underserved populations. One of the first reports of the benefits of these medical student-run free clinics was described by Davenport (2000) in her 1990 ethnographic study of medical students, preceptors, and their patients.

Student-run free clinics provide care to groups that would otherwise not receive essential healthcare services while simultaneously providing experiential learning for students working with the medically underserved. As of 2011, there were a reported 111 student-run free clinics at 49 medical schools in the United States (Asanad et al., 2018). Investigators have found that student-run free clinics meet or exceed standards of care when compared with primary care clinics (Asanad et al., 2018; Bartlett, 2015), and patients have reported that they were pleased with the care they receive at a student-run free clinic (Campbell, Gibson, O'Neill, & Thurston, 2013).

Faculty and graduate students from a southern California university school of nursing developed their first nurse-managed student-run free clinic in 2012, and by 2016, it had expanded to five free clinics. These clinics are staffed by university nursing faculty, volunteer healthcare providers, and family nurse practitioner (FNP) and undergraduate Bachelor of Science Nursing (BSN) students. Named the *Student Healthcare Project*, this endeavor provides free medical and nursing care that includes acute and chronic disease management, health promotion, patient education, case management, and social services. The students also offer assistance with accessing health-related resources such as mental health referrals, rehabilitation services, and expanded Medicaid and health insurance provided through the State of California's health insurance marketplace.

As previously indicated, uninsured and underinsured patients are at risk for poor self-care management and adverse complications secondary to their chronic conditions. These patients have multiple factors that place them at risk for poor outcomes such as lack of access to care, lack of financial resources to purchase medication and nutritious food, and lack of knowledge related to self-care and disease processes. Lack of patient's self-care management strategies has been shown to have an adverse impact on health outcomes, mortality, and overall quality of life in individuals with chronic disease (Center for Managing Chronic Disease, 2019; Thomsen, 2015).

Historically, the Student Healthcare Project did not employ a formal process to educate patients on self-care management. Self-care management programs have improved health outcomes among individuals with chronic health conditions (Lee, Frangos, Torres, Winkler, Ji, & Dow, 2016; Reynolds et al., 2018). Researchers have found that chronic disease self-care management programs decrease physical inactivity and depression (Ory et al., 2014). In addition, self-care management programs have improved communication with healthcare providers and reduced chronic disease associated symptoms (Ory et al., 2014).

The Intervention

The Patient Activation Intervention (PAI) was developed to create a practice change using constructs of the Chronic Care Model (CCM; Improving Chronic Illness Care, 2015). The application of the CCM has been shown to improve patient outcomes in the care of chronic illness (Reynolds et al., 2018). Informed by a population assessment, the PAI was designed to enhance patient activation (i.e., self-care management) and the chronic illness care provided by FNP students and BSN students to medically underserved people. Self-care management support and delivery system design were the two constructs of the CCM that were the focus of the intervention.

Topics for self-care management education included medication management, basic knowledge of the chronic disease, when to call the clinic to report symptoms, diet, and physical activity. The FNP students documented in the electronic health record (EHR) that the medication reconciliation, patient-centered goals, and self-care management education topics were addressed. At follow-up appointments, FNP students revisited patient-centered goals and updated the goals as needed.

Methods

Before data collection began, an expedited review protocol was approved by a Southern California university Institutional Review Board. Upon receipt of approval, a population assessment was conducted at the identified clinic to evaluate health service provision. Multiple sources of data were accessed, including the EHR.

Quantitative analyses were used to derive population diagnoses.

Design

The evaluation plan for the intervention utilized a quasi-experimental one-group pretest–posttest design. The sample was one of convenience. The target population for the intervention was uninsured and underinsured patients aged 18 to 65 years with one or more chronic health conditions seeking care at the identified free clinic site between May 2015 and July 2015. The Patient Activation Measure (PAM) tool was administered at the beginning and the end of the intervention.

Prior to the implementation of the intervention, nursing faculty, healthcare providers (FNPs and physicians), and BSN and FNP students assigned to the clinic were trained on relevant aspects of the intervention. The FNP students were mentored and supervised by nurse practitioner faculty or physicians. The BSN students were mentored and supervised by the undergraduate nursing faculty. FNP students were educated on the evidence-based guidelines that were being utilized by the providers for every patient encounter. All active patients with a chronic health condition were screened between May 2015 and July 2015 to obtain a baseline patient activation scores using the PAM tool (Hibbard, Stockard, Mahoney, & Tusler, 2004) and the chart audit tool.

Instruments

The PAM tool and the chart audit tool were used to obtain data for the evaluation of the PAI. The PAM tool is a 13-item instrument that assesses a patient's perception of knowledge, skills, and self-confidence in managing their health or chronic illness (Hibbard, Mahoney, Stockard, & Tusler, 2005). The PAM tool has been shown to be a valid and reliable tool with a Cronbach's α of .87. The instrument was scored on four levels of patient activation. The BSN students were responsible for administering the PAM tool. The FNP students scored and documented the PAM score in the EHR for each patient. At each patient visit, FNP students conducted medication reconciliation and education, including developing patient-centered goals and providing self-care management education.

A chart audit tool was developed to assess the students' adherence to constructs of the PAI. Baseline data were gathered for patients with chronic health conditions who had office visits 8 weeks prior to the implementation of the intervention. These baseline data were used to assess current documentation practices, including medication reconciliation, patient-centered goals, self-care management education, and scheduled follow-up appointments. Postintervention chart audit data were used for comparison.

Results

Population and Sampling Frame

The patient populations served at the student-run free clinics were comprised of unsheltered, uninsured, and underinsured San Diego County residents and included migrants, survivors of human trafficking, and lesbian, gay, bisexual, transgender, and queer individuals. The population assessment also revealed that patients lacked skills to self-manage their chronic diseases and were active in their self-care management "some of the time" (Saude, 2014, p. 11).

Eighty-five percent ($n = 109$) of the patients were between the ages of 25 to 64 years; 56% were males ($n = 72$), and 44% ($n = 57$) were females. Fifty-four percent ($n = 70$) identified as Caucasian and 35% ($n = 45$) identified as Hispanic; 20% ($n = 26$) were Spanish-speaking only (Student Healthcare Project, 2014). Forty-three percent ($n = 55$) of patients had at least one chronic disease, and 100% ($n = 129$) of the patients either lacked health insurance or were underinsured (Student Healthcare Project, 2014). Approximately 15% ($n = 19$) of patients were unsheltered and suffered from food insecurity (Student Healthcare Project, 2014).

Sample

For the practice change intervention, a total of 19 patients with at least one chronic health condition were seen during the intervention period. Of the 19 patients seen at the clinic, there was a total of 42 office visits. For patient characteristics (see Table 1).

Patient Activation

The mean PAM score was 60.95 (standard deviation ± 12.03); this equates to a level three of four on patient activation. Patients who score a level three have been found to have an excellent foundational understanding of their chronic illness and are working on their self-care management abilities (Insignia Health, 2016). Such patients have reported that they often feel like they are in a partnership with the healthcare team to improve and maintain their health.

Patient Outcomes

Chi-square (χ^2) statistics were calculated to identify a statistically significant ($p < .05$) difference in the documentation of medication reconciliation, patient-centered goals, and self-care management education from baseline to postintervention. Fisher's exact test

Table 1. Demographic Characteristics of Sample.

Characteristic	
Patients with chronic health conditions	19
Office visits	42
Age (years)	57.02 ± 8.385
Gender	%
Female	52
Male	48
Race	
Black	21
Hispanic	48
White	26
Other	5
Primary language	
English	62
Spanish	38
Chronic disease	
Hypertension	37
Diabetes	16
Depression	22
Other	25

was used for the statistical analysis for follow-up appointments. Analyses revealed a statistically significant increase from baseline for documentation of medication reconciliation, patient-centered goals, self-care management education, and follow-up appointment scheduling (see Table 2 for χ^2 statistics).

Discussion

The CCM provided a framework for BSN and FNP students to improve health service provision delivered to underserved patients with chronic health conditions. The results demonstrated statistical significance, which has clinical implications. The findings suggest that improved patient activation and clinical outcomes can be attributed to accurate medication reconciliation, providing self-care management education, and enhanced access to follow-up appointments to ensure care across the continuum and that this care can be effectively provided by nursing students.

Although the mean baseline PAM scores were higher than expected, this may have been due to the preexisting patient–provider–student relationships. The average clinic visit was between 30 and 60 minutes, and the majority of the time spent was with a student clinician. These visits were much longer than a routine 15-minute office visit in the community.

The relationship between patient and students in this project and the possible implications of this relationship on outcomes may describe the effect of nurse presence. Presence is defined as "an interpersonal encounter involving being with another who is in need with the whole of oneself" (Stockmann, Gabor, Divito-Thomas, & Ehlers, 2018, p. 59). Presence has been recognized as part of the nurse–patient relationship and as a therapeutic intervention in and of itself. Future practice innovations should include methods to document the effect of student nurse presence on the identified outcomes of interest when intervening with vulnerable populations.

Table 2. Documentation Performance Frequencies and Associated χ^2 Value for Outcomes of Interest.

	Intervention		
Outcome of interest	Pre	Post	χ^2 (1, $N = 42$)
Medication reconciliation			
No	13 (41.9)	2 (4.8)	
Yes	18 (58.1)	40 (95.2)	15.10*
Patient-centered goals			
No	30 (96.8)	12 (28.6)	
Yes	1 (3.2)	30 (71.4)	33.96*
Self-management education			
No	18 (58.1)	0 (0)	
Yes	13 (41.9)	42 (100)	32.37*

Note. Numbers in parentheses indicate column percentages.
*$p < .05$.

Patients with chronic diseases are frequent users of the ED due to the lack of a provider or limited appointment availability (Magee et al., 2013). A 2018 report of an observational study of hospital ED visits between 2007 and 2012 revealed an uptick in ED visits, especially for patients with multiple chronic conditions who did not have or were not eligible for Medicaid. The sample included "31 million visits from 950 hospitals in 30 states" (Powel, Yu, Isehunwa, & Chang, 2018, p. 2).

According to Office of Clinical Practice Innovation at the George Washington University School of Medicine and Health Sciences, ED visits could be avoided if patients had the ability to self-manage their chronic illnesses and understood early warning signs of worsening symptoms associated with their chronic disease (ClinicalKey, 2014, May 20). Patients' or family members' knowledge of when to contact the clinic when symptoms change is imperative to managing the patient's chronic conditions at home. When patients report issues to their primary care provider early, outpatient management can be instituted to decrease complications and associated healthcare costs. In their 2015 study, Enworam and Tabi found that patients who understood and participated in a disease self-management educational program significantly slowed their decline in glomerular filtration rate. Effective patient communication allows management to be done in an outpatient setting and minimizes the risk of a preventable hospitalization or an avoidable ED visit.

Medication errors and discrepancies impact patients across the care continuum. “Safe medication practices depend on communication within the healthcare community, including patients and their families” (Institute for Safe Medication Practices, 2019). The risk for preventable adverse drug events can be reduced by medication reconciliation (Vejar, Makic, & Kotthoff-Burrell, 2013). It is estimated that 8,000 to 12,000 deaths per year occur due to adverse drug events (Vejar et al., 2013). One study found multiple discrepancies between what was documented by the provider and what the patient was taking (Vejar et al., 2013). Another study found that medication discrepancy rates in the ambulatory care setting were at 75% (Coletti et al., 2015). Medication reconciliation improves patient safety, minimizes risk for adverse drug events, and reduces the risk for complications.

The limitations of this practice change intervention included the small sample size and the frequent changes in BSN students due to clinical rotation scheduling. In addition, the uninsured and underinsured patient population studied possessed barriers to health care not present in other patient populations. For example, this patient population has previously been assessed to have increased levels of food insecurity, lack of resources, lack of transportation, language barriers, and low health literacy levels, making participation in the intervention more challenging (American Public Health Association, 2017; National Coalition for the Homeless, 2017).

The use of the CCM as the basis for developing the PAI at a nurse-managed, student-run free clinic provided experiential learning in delivering complex care to a vulnerable population while improving chronic illness care and patient outcomes. The strength of the evaluation plan included the pretest–posttest design, which allowed the patient to act as their own controls. This design allowed for attribution of the intervention to the results; however, threats to internal validity could not be ruled out (e.g., history, maturation; Riffenburgh, 2006).

Conclusion

The PAI provided an opportunity to demonstrate effective care provided by students utilizing the CCM at a student-run free clinic. This project provided opportunities for FNP students and BSN students to be exposed to vulnerable and underserved groups in situations where patient financial resources are limited. The findings from this project will inform nurse educators about an innovative approach to engage nursing students within their communities to increase quality healthcare service access to a segment of the population that might not otherwise receive any health care.

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