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Improving Confidence for Self Care in Patients with Depression and Chronic Illnesses

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Abstract

The aim of this study was to examine whether patients who received a multi-condition collaborative care intervention for chronic illnesses and depression had greater improvement in self-care knowledge and efficacy, and whether greater knowledge and self-efficacy is positively associated with improved target outcomes. A randomized controlled trial with 214 patients with comorbid depression and poorly controlled diabetes and/or coronary heart disease tested a 12-month team-based intervention that combined self-management support and collaborative care management. At 6 and 12 month outcomes the intervention group showed significant improvements over the usual care group in confidence in ability to follow through with medical regimens important to managing their conditions and to maintain lifestyle changes even during times of stress. Improvements in self care-efficacy were significantly related to improvements in depression, and early improvements in confidence to maintain lifestyle changes even during times of stress explained part of the observed subsequent improvements in depression.

Keywords

self-efficacy; self-management; chronic illness care; collaborative care

Managing multiple chronic health conditions can be difficult for patients as they attempt to maintain satisfying daily lives while coping with symptoms, medical regimens, emotional reactions and shifting responsibilities. Depression is a common condition among adults with chronic medical illnesses.¹⁻³ For many patients with chronic conditions the added burden of depression makes self-care even more challenging.^{4, 5} Core symptoms of depression such as apathy, hopelessness, memory problems and fatigue can thwart even small behavioral changes needed to manage chronic medical illnesses.^{6, 7, 8} Optimal care for people with chronic conditions, especially those with comorbid depression, must include ongoing self-care support to help patients gain the knowledge, skills and confidence in their ability to perform home-based activities needed to promote their health.⁹⁻¹²

Self-care knowledge and self-efficacy, or perceived confidence to take action to manage chronic illness and to maintain such skills over time, have been shown to be positively impacted by self-management interventions and to be associated with better health outcomes. Lorig and colleagues were among the first to report that improved self-efficacy, rather than measurable changes in health behaviors, was associated with improvements in pain in arthritis sufferers who attended an arthritis self-management support program.¹³ Similarly, improvements in self-efficacy were associated with improvements in depression symptom severity among those who received a brief depression relapse prevention self-management program.¹⁴ In a series of studies, Hibbard and colleagues have shown that patients' self-rated confidence and knowledge necessary to take self-care action, and to stay the course even under stress, are associated with improved self-management behaviors.¹⁵ Among patients with diabetes, Remmers et al have shown that confidence to carry out self-care activities was associated with future health outcomes and utilization.¹⁶ Promoting belief in one's capability to actively manage conditions may be particularly important for patients with comorbid depression and other chronic conditions, where lower motivation and confidence for self-care may be hallmarks of their illness.

We recently conducted a randomized controlled trial to evaluate a novel multi-condition collaborative care intervention for chronic illnesses and depression (TEAMcare). The intervention, which was delivered by nurses with guidance from a multi-specialty back-up team, included self-care support and led to improvements in glycosylated hemoglobin (HbA_{1c}), low density lipoprotein cholesterol (LDL), systolic blood pressure (SBP), and depressive symptom severity.¹⁷ A previous report by our study team examined processes of care related to these improved outcomes such as treatment initiation, timing, number of medication adjustments, self-monitoring of blood pressure and glucose, and medication adherence.¹⁸ The intervention was associated with both earlier and more frequent adjustments of medication and more self-monitoring of blood pressure and glucose compared to usual care. In this paper we examine the effects of the TEAMcare intervention on knowledge about medication and self-efficacy for managing multiple chronic conditions in order to further understand some of the behavioral processes that underlie improved outcomes found among those receiving the intervention. We hypothesized that compared to patients receiving usual care, patients who received the intervention would report: 1) greater improvement in knowledge and self-care efficacy, and; 2) greater knowledge and self-care efficacy would be positively associated with improved target outcomes (depressive symptoms, HbA_{1c}, SBP, LDL).

METHOD

Recruitment

Study participants were recruited from 14 primary care clinics of Group Health, an integrated healthcare system in Washington State, from May 2007 to October 2009. The study protocol was approved by the Group Health Institutional Review Board. Details of recruitment were reported elsewhere.¹⁷ Briefly, eligible patients who scored 10 or greater on the PHQ-9 depression scale^{19, 20} on a mailed or phone survey and had evidence of poorly controlled diabetes and/or coronary heart disease (blood pressure above 140/90 mmHg, LDL above 130 mg/dl, or HbA_{1c} >8.5%) based on electronic medical records were recruited. Exclusion criteria included: terminal illness; residence in long-term care; severe hearing loss; planning bariatric surgery; pregnant or nursing; ongoing psychiatric care; bipolar disorder or schizophrenia; antipsychotic or mood stabilizer medication use; and mental confusion suggesting dementia. Eligible patients completed a baseline interview and gave verbal consent for lab tests before an in-person visit, at which they provided written informed consent prior to randomization. Participants were randomly assigned by computer using a permuted block design to either usual care with their primary care physician or to the

experimental intervention. The trial was registered at [ClinicalTrials.gov](https://clinicaltrials.gov) (number NCT00468676).

Intervention

The goal of the TEAMcare intervention was to improve depressive symptom, glycemic, blood pressure and lipid control by integrating collaborative care for depression with a vigorous medication treat-to-target program for diabetes and heart disease. The 12-month intervention used a patient centered approach and combined self-management support, monitoring of disease control indicators, and pharmacotherapy to control depression, hyperglycemia, hypertension and hyperlipidemia. Patients worked collaboratively with one of four intervention nurses and their regular physicians to create individualized clinical and self-management goals such as increases in exercise or changes in diet. In scheduled visits at the patient's primary care clinic every 2 to 3 weeks, nurses monitored patient progress on depressive symptoms (PHQ-9), medical disease control and self-care activities. Treatment protocols, employing commonly used medicines, guided medication adjustments for patients not achieving specific goals. Nurses followed patients proactively to support medication adherence and self-care, using motivational counseling and brief negotiation methods,²¹ problem solving and behavioral activation approaches. Patients received self-care materials including: The Depression Helpbook,²² a depression care DVD, a chronic disease management booklet and other materials and self-monitoring devices (blood pressure or blood glucose meters) appropriate to their condition. Nurses received weekly supervision with a psychiatrist (WK or PC) and family medicine/internal medicine consultant (EHBL or BY) and psychologist (EJL) to review new cases and patient progress. An electronic registry supported tracking PHQ-9 scores and HbA_{1c}, LDL and blood pressure levels. The supervising physicians recommended initial choices and changes in medications tailored to patient history and clinical response. The nurse communicated these recommended medication changes to the PCP responsible for medication management. Once patients achieved targeted levels for relevant measures, the nurse and patient developed a maintenance plan. The nurses then followed patients with telephone calls every 4 to 6 weeks to complete a PHQ-9 and review adherence and lab test results. Patients whose disease control worsened were offered follow-up and protocol-based intensification of treatment regimens.

Measures

At baseline, 6- and 12-months, telephone interviewers assessed depression symptoms, disability, quality of life, and other study measures. Depression was assessed by the SCL-20.²³ Blood pressure and HbA_{1c} were measured in-person at baseline, 6 and 12 months and fasting LDL at baseline and 12 months. Knowledge about medications and self-efficacy for self-management were assessed with four questions adapted for this study from the short form of the Patient Activation Measure,²⁴ see Table 2. While the original measure has been shown to have adequate reliability and validity^{24, 25}, the psychometric properties of these adapted items are unknown.

Statistical Analysis

Descriptive statistics such as means and standard deviations for continuous data and percentages and counts for categorical data were calculated for patient characteristics. Unadjusted differences between intervention and usual care groups at 12 months in Likert (1 to 4) question scores were examined using Mann-Whitney rank-sum tests; differences in treatment group question score means were examined using unequal variance t tests. Ordered logistic and linear regressions were used to examine baseline adjusted differences between 12 month treatment groups. Generalized estimating equations assuming independence correlation were used to calculate logistic (Agree vs. Disagree) and linear

regressions predicting 6 and 12 month combined question scores. Linear regression assessed the relationship between 12 month question responses and SCL depressive symptom scores, HbA_{1c}, SBP, and LDL controlling for baseline question scores and treatment group. Evidence that change in self efficacy scores acts as a mediator was examined first by entering baseline and 6 month self efficacy scores in a linear regression model of intervention predicting 12 month SCL depression scores and then by evaluating in separate linear regression models the relationships of intervention to 6 month score change and change to 12 month SCL. All analyses were done using STATA 11.0 and SAS 9.2 software.

RESULTS

Demographic and clinical characteristics of the 214 participants enrolled in the study are shown in Table 1. There were no differences between the intervention (n =106) and usual care (UC) groups (n= 108) on any of these variables at baseline. The CONSORT diagram for the trial is available in a prior publication.¹⁷

Intervention effects on knowledge about medications and self-efficacy for self-management

Table 2 shows the baseline, 6 and 12 month distribution of answer values on the knowledge and self-efficacy items in the usual care and intervention groups. In adjusted analyses of mean values across the 6 and 12 month follow-ups the intervention group showed significant improvements over the usual care group in two of the self-efficacy items: “I am confident that I can maintain lifestyle changes like diet and exercise even during times of stress,” and “I am confident that I can follow through on medical regimens that are important in managing my health conditions.” Analyses of the items as binary outcomes seemed to support these conclusions in the first but not the second item as the latter was no longer significant (p-value=0.056) due to reduced power. The intervention patients had a non-significant trend toward improvements in knowledge about prescribed medications or confidence in figuring out solutions to new problems in health conditions that may arise compared to usual care patients. On these two items, participants in both the intervention and usual care groups endorsed high levels of knowledge/ self-efficacy) at baseline and at follow-ups.

Association of self- efficacy with improved disease outcomes

Each of the two self-efficacy items that showed greater improvement in the intervention group was associated with improved SCL depression symptom severity scores at 12 months (Table 3). There was evidence that a baseline to 6 month score change in the item “I am confident that I can maintain lifestyle changes like diet and exercise even during times of stress” mediated the intervention effect on SCL depression scores. When baseline and 6 month scores on this item were entered into a linear regression model of the intervention predicting 12 month SCL depression score, the intervention coefficient increased by 20% (−0.33 to −0.27, p = .001 and p =.007, respectively). Further, in separate models it appeared that intervention predicted change (p = 0.029) and change predicted SCL (p < 0.001). Neither of the self-efficacy items were associated with the observed improvements in LDL, systolic blood pressure or HbA_{1c} (data not shown).

COMMENT

A multi-condition collaborative care intervention for primary care patients with depression, diabetes and heart disease was designed to provide self-care support and increase patients’ knowledge, confidence and ability to make lifestyle changes and follow medical regimens important for their disease management. The intervention was successful in improving

participants' confidence in their ability to both follow through with medical regimens important to managing their conditions and to maintain lifestyle changes even during times of stress. As reported earlier, the intervention also led to significant improvements in clinical outcomes (depression, LDL, SBP, HbA_{1c}).¹⁷ Improvements in self care-efficacy were significantly related to improvements in depression among all trial participants, and early improvements in confidence to maintain lifestyle changes even during times of stress explain at least part of the observed subsequent improvements in depression. This finding is consistent with social cognitive theories of depression and depression treatment^{26, 27} and with prior primary care research.¹⁴ Social cognitive theory posits that belief in one's efficacy to exercise control is a common pathway through which psychosocial influences affect health.²⁸ An optimistic sense of personal efficacy leads to positive mood states and well-being, and positive mood states in turn enhance self-efficacy.

We did not find that the intervention improved patients' knowledge about their medications or their confidence in their ability to figure out solutions when new situations or problems arise with their health conditions. However, on these items, participants in both the intervention and usual care groups already endorsed high levels of knowledge/ self-efficacy leaving little room for improvement.

Contrary to our hypotheses, improved self-efficacy was related to improved depression scores, but not to improvements in diabetes and heart disease indicators. It is possible that these clinical outcomes are less, or at least more distally, related to self-efficacy. A prior report from our study group suggests that frequent and timely treatment adjustment of insulin, oral hypoglycemic, lipid lowering and anti-hypertensive medications in the intervention compared to control group were critical to improved diabetes and heart disease outcomes in this trial.¹⁸

A limitation of this research is the use of a much abbreviated measure of self-care self-efficacy that does not fully represent the construct under investigation. Although this measure was brief, we believe that brief questionnaires are helpful for recruiting more representative (i.e., less motivated) patients and for maintaining relatively high rates of participation in follow-up data collection. However, additional research with more comprehensive measures of self-care knowledge and confidence will be necessary.

The trial was not powered on the self-efficacy questions, and may not have showed a benefit or association with medical outcomes because of the limited sample size. Other limitations include recruitment of patients from a single large organized system of health care. Results may not generalize to patients receiving care through other systems. Whether this intervention program would provide similar outcomes in participants with different demographic characteristics also warrants further study.

It is encouraging that this preliminary research found a multi-condition team-based collaborative care intervention can support self-care and improve important aspects of self-care confidence which are associated with improved depression outcomes. Intervention nurses spent a significant amount of time and effort encouraging patients' health behavior change, which resulted in improvement in self-efficacy. This study adds to the evidence base showing that supporting self-care for patients with chronic disease requires not only acknowledgement of patients' active and central role for disease improvement, but also providers trained in patient centered communication and a reorganization of services responsive to patients' needs.²⁹

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Table 1

Characteristics of participants*

		N = 214
Age – yr		56.8 (11.3)
Female - %		52%
>= 1 yr of college		59%
Minority race or ethnic group (non-white or Hispanic) - %		23%
Employment - %	Part-time or full-time	56%
	Retired	30%
	Unemployed or disabled	12%
	Homemaker	2%
>= Antidepressant prescription filled in previous 12 mo - no. (%)		55%
PHQ - 9	Score	14.3 (3.5)
	Range	10 to 26
Depression for >= 2yr - %		74%
SCL - 20	Score	1.7 (0.6)
	Range	0.2 to 3.25
Glycated hemoglobin		8.1 (2.0)
LDL cholesterol –mg/dl		107.7 (35.8)
Systolic blood pressure –mm Hg		134 (17.9)
Diabetes (with or without coronary heart disease) - %		86%
Coronary heart disease - %		26%
Body-mass index		36.8 (8.4)

* means (standard deviations) unless indicated

Table 2

Descriptive percentages, answer value means and model p-values for Self-Efficacy Questions

Question	AnswerBL	BL		6mo		12mo		BL adjusted p-values
		UC	I	UC	I	UC	I	
I am confident that I can maintain lifestyle changes like diet and exercise even during times of stress.	N	108	106	96	97	92	93	
	% Agree*	39%	44%	46%	66%	50%	71%	<0.001 **
	Mean Value	2.3	2.4	2.4	2.7	2.4	2.8	<0.001 ***
I know what each of my prescribed medicines do.	N	106	106	96	96	88	92	
	% Agree*	82%	82%	83%	91%	86%	89%	0.12 **
	Mean Value	3.2	3.1	3.2	3.3	3.3	3.3	0.5 ***
I am confident that I can follow through on medical regimens that are important in managing my health conditions.	N	108	105	96	96	92	93	
	% Agree*	76%	73%	82%	87%	83%	90%	0.056 **
	Mean Value	3.0	2.8	3.0	3.1	3.0	3.2	0.015 ***
I am confident that I can figure out solutions when new situations or problems arise with my health condition.	N	108	105	94	97	90	93	
	% Agree*	77%	73%	80%	88%	81%	86%	0.11 **
	Mean Value	2.9	2.9	2.9	3.0	2.9	3.0	0.2 ***

UC = Usual Care; I = Intervention

% Agree is derived from the aggregation of responses 3: Agree and 4: Strongly Agree

**

Logistic regression (Agree versus Disagree) predicting combined 6 and 12 month outcome assuming independent correlation.

Linear regression predicting combined 6 and 12 month outcome assuming independent correlation

Table 3

Baseline, 6 month and 12 month SCL score descriptive statistics by Question Answer and adjusted parameter p-values of 12 month Answers predicting 12 month SCL score from linear regression controlling for Intervention and baseline SCL.

Question at 12 months	Answer	N	SCL score			adjusted p-val
			BL	6mo	12mo	
			Mean (SD)	Mean (SD)	Mean (SD)	
I am confident that I can maintain lifestyle changes like diet and exercise even during times of stress.	1: Strongly Disagree	19	1.74 (0.50)	1.33 (0.61)	1.56 (0.69)	<0.001
	2: Disagree	54	1.76 (0.62)	1.01 (0.62)	1.01 (0.59)	
	3: Agree	93	1.69 (0.61)	1.08 (0.78)	0.97 (0.70)	
	4: Strongly Agree	19	1.61 (0.65)	0.62 (0.53)	0.43 (0.35)	
I am confident that I can follow through on medical regimens that are important in managing my health conditions.	1: Strongly Disagree	2	1.25 (1.34)	0.45 (0.42)	1.67 (2.02)	0.047
	2: Disagree	23	1.72 (0.64)	1.21 (0.64)	1.30 (0.55)	
	3: Agree	113	1.67 (0.60)	1.01 (0.69)	0.91 (0.64)	
	4: Strongly Agree	47	1.81 (0.58)	1.05 (0.79)	0.98 (0.76)	