



Research report

How well do patient activation scores predict depression outcomes one year later?

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ABSTRACT

Background: This study examines the relationship between patient activation, a measure of individuals' knowledge, skill, and confidence for managing their health, and rates of depression remission and response among patients with depression.

Methods: Patients from Fairview Health Services in Minnesota with moderate to severe depression in 2011 and a PHQ-9 score in 2012 were included in the analysis ($n=5253$). Patient activation in 2011 and other health and demographic features were extracted from the electronic health record. We examined how patient activation predicted depression remission and response rates and changes in depression severity over one year using regression models. We also explored how activation predicted healthy behaviors among depressed patients.

Results: Higher baseline patient activation predicted lower depression severity and higher depression remission and response rates a year later. The most activated patients had PHQ-9 scores in 2012 two points lower than the lowest activated patients, and they had twice the odds of remission. Activation also predicted increase in healthy behaviors.

Limitations: We were unable to examine the use of mental health services or control for the number of prior depressive episodes and duration of the current depressive episode in the analysis.

Conclusions: We found that higher patient activation predicted better depression outcomes. While we are unable to explore the mechanism of this association, we observed that more activated patients are also engaged in more healthy behaviors, suggesting that the mechanism may be behavioral. Support of patient activation may be an effective approach for providers to reduce patients' depression severity.

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1. Introduction

Depression remission and recovery rates vary greatly across population groups. While some clinical and demographic factors appear to play a role in these differences, in this study we investigate the role of patient activation – a measure of individuals' knowledge, skill, and confidence for managing their health – in depression course. Patient activation has been associated with positive health outcomes in other clinical areas, and there is emerging evidence that it is related to depression outcomes (Hibbard and Greene, 2013). Here, we examine its role as a potential predictor of depression remission among patients with moderate to severe depression over the course of one year.

2. Background

Major depressive disorder is a common and disabling disease. A landmark study by Kessler et al. found that approximately 16% of U.S. adults will experience a clinically relevant major depressive episode during their lifetimes, and that nearly all people who experienced depression report at least moderate role impairment as part of their disease (Kessler et al., 2005). The clinical course of depression has been studied extensively. A large population based survey in Baltimore showed that the median length of a major depressive episode is 3 months (Eaton et al., 2008). Episode duration, however, varies considerably. Women tend to have longer depressive episodes than men, and higher severity as well as comorbidity with other affective disorders, particularly dysthymia, can greatly increase the average length of a depressive episode (Bebbington et al., 1998; Spijker et al., 2002). A more recent study by Eaton looked in more detail at the lifetime course of depression and found that only about 15% of sampled patients experienced unremitting, chronic depression while 50% experienced

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remission with no relapse and 35% went on to experience recurrent depressive episodes (Eaton et al., 2008).

A number of behavioral and patient health factors have been found to be related to depression remission. A 2011 epidemiological study of chronic depression found that higher socioeconomic status, younger age, no history of divorce, urbanicity, higher self-esteem, and better overall health were all associated with less chronicity or more remission of depressive symptoms (Rubio et al., 2011). The same study also found that family history of depression, substance use disorders, or childhood behavioral problems were also associated with greater chronicity.

A number of studies have found that more severe depression is less likely to enter remission. A large multicenter clinical trial found that patient response to cognitive therapy and imipramine can be predicted by specifics of depression symptomology such as degree of social or cognitive dysfunction (Sotsky et al., 1991). Another study found that personality traits of neuroticism and obsessional interference had an impact on longitudinal depression outcomes (Duggan et al., 1990). A more recent follow-up held that high levels of neuroticism predict both onset and maintenance of depressive symptoms (Ormel et al., 2001).

Depression has notable effects on patients' physical health. Depressed patients have a standardized mortality rate for suicide of 20.9 in men and 27.0 in women, and adults with depression show increased risk of all-cause mortality, cardiovascular death, and stroke mortality (Gump et al., 2005; Osby et al., 2001). Major depression is associated with greater numbers of chronic conditions such as hypertension and diabetes, and patients with depression often exhibit health behaviors that worsen their outcomes from chronic conditions such as poor adherence to treatment regimens, limited self-care, and lack of physical activity (Green et al., 2010; Gunn et al., 2012; Whooley et al., 2008).

Depression is also associated with a sizeable economic burden to society. One study found that clinical depression was highly associated with increased unemployment and decreased salary (Whooley et al., 2002). The National Comorbidity Survey Replication found that an average of 27 work days per year per depressed person were lost due to absenteeism in the workplace (Kessler et al., 2006). This results in an estimated loss of \$36.6 billion per year in the United States.

2.1. Patient activation and depression

This study examines the relationship between patient activation and depression remission and treatment response outcomes. The patient activation measure (PAM), which is a measure of patients' knowledge, skill and confidence for self-managing their health, is a significant predictor of patient outcomes and care effectiveness (Hibbard et al., 2005). While most research on the PAM has focused on its relationship to prevention and physical health outcomes, there are a small number of studies examining PAM's relationship to depression outcomes. Two cross-sectional studies found that low patient activation, as measured by the PAM is associated with more depressive symptoms and poorer depression outcomes (Hibbard et al., 2007; Magnezi et al., 2014). This association is not surprising since core symptoms of depression – like anhedonia, fatigue, low self-worth, and difficulty concentrating – can undermine an individual's confidence in their ability to engage actively in their health care.

While depression and patient activation are correlated, there is evidence that it is possible to increase activation among depressed patients with chronic illnesses (Druss et al., 2010; Ludman et al., 2013). Further, one small study found that, cross-sectionally, patient activation is associated with better quality of life among depressed patients (Magnezi et al., 2014). A small randomized controlled trial sought to improve activation in chronic disease

patients with depression through patient medication and self-care counseling as well as motivational interviewing (Ludman et al., 2013). The study found that patients in the intervention showed both improved activation as well as improvements in their depression severity.

While various biological and psychological mechanisms behind depression course have been studied, this is the first study examining at the impact of patient activation on the course of depression remission and response. In this prospective cohort study we explore the relationship between baseline patient activation in depressed patients and depression outcomes one year later. In addition, we seek to understand the mechanisms explaining why more activated patients might be more likely to experience remission. Specifically, we explore whether more activated patients are more likely to engage in healthier behaviors (i.e. quitting smoking, reducing BMI) and receive regular preventive care.

3. Methods

3.1. Study population and setting

This study examines data from primary care patients who receive care through Fairview Health Services, a large, nonprofit health care system in Minnesota that includes 44 primary clinics as well as specialty care clinics and hospitals. All information on patient activation, depression status, and chronic illness status was obtained from patient electronic medical records in 2011 and 2012.

In order to be included in this analysis, Fairview patients needed to be at least 18 years old, have completed a PAM in 2011, have had a Patient Health Questionnaire (PHQ-9) score of at least 10 in 2011, and have completed the PHQ-9 in 2012. Within the total adult Fairview population, there were 28,166 patients for whom we had both a PAM score and PHQ-9 score in 2011. Of those 8299 (29.5%) had a PHQ-9 score of at least 10 in 2011, and 5253 of those patients (63.3%) had PHQ-9 data in 2012 and were thus included in these analyses.

3.1.1. Independent variable

The key independent variable in the study was the patient activation measure or PAM, which is a 13 item scale scored on a 0 to 100 scale. Each of the 13 items is a statement about managing one's health such as "I know how to prevent problems with my health." Patients respond to each item using a four point Likert-type scale of agreement or disagreement. Responses form an interval level, uni-dimensional, Guttman-like scale with strong psychometric properties (Hibbard et al., 2005). In addition to the raw score between 0 and 100, the measure can be collapsed into levels of activation, representing a developmental progression from being passive with regards to one's health (level 1) to being pro-active about health (level 4) (Hibbard et al., 2005).

3.1.2. Dependent variables

We used three dependent variables related to depression: depression severity, depression remission, and depression response. All three variables were based off of measurements using the PHQ-9, a multi-purpose screening, diagnostic, and severity monitoring self-report tool for depression based upon DSM-IV depression diagnostic criteria (Kroenke et al., 2001). The tool screens for the presence and frequency of depressive symptoms including suicidality. Scores below 5 indicate no presence of depression while scores at or above 10, 15, and 20 represent moderate, moderately severe, and severe depression respectively.

We first measured change in depression severity, calculating the difference between 2011 and 2012 PHQ-9 scores. Based upon Minnesota Community Measurement quality metrics, we further

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