



## Patient Perception, Preference and Participation

Measuring self-management of patients' and employees' health: Further validation of the Patient Activation Measure (PAM) based on its relation to employee characteristics<sup>☆</sup>Jinnet Briggs Fowles<sup>a,\*</sup>, Paul Terry<sup>b</sup>, Min Xi<sup>c</sup>, Judith Hibbard<sup>d</sup>, Christine Taddy Bloom<sup>e</sup>, Lisa Harvey<sup>f</sup><sup>a</sup> Health Research Center, Park Nicollet Institute, Minneapolis, MN, USA<sup>b</sup> StayWell Health Management, USA<sup>c</sup> Health Research Center, Park Nicollet Institute, USA<sup>d</sup> Department of Planning, Public Policy & Management, University of Oregon, USA<sup>e</sup> Professional Education, Park Nicollet Institute, USA<sup>f</sup> Health Education, Park Nicollet Institute, USA

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## ABSTRACT

**Objective:** Evaluate the Patient Activation Measure (PAM) in relation to personal characteristics in employed populations. Further validate the PAM for use in improving clinical or employer-based health-intervention programs.

**Methods:** Data for analysis were taken from baseline survey information and health screenings collected during a randomized, controlled trial testing two different health promotion programs. Study population included 625 employees (predominantly white collar) from two companies in the northern Midwest of the United States: a large, integrated health care system and a national airline.

**Results:** PAM's psychometric properties are robust in two employed populations. Activation is directly related not only to health status, but also to job performance measures. The strong positive relationship of PAM to measures of healthy behavior, health information-seeking and readiness-to-change further validate the measure. Commonly, a difference of 5 points on the PAM separated healthy from less healthy behaviors.

**Conclusion:** Activation can be understood in a broader population health context and need not be restricted to people with chronic illnesses. The study provides guidance on how to interpret PAM scores.

**Practice implications:** The PAM can be used as part of any health-intervention program designed to improve patients' or employees' self-management skills, whether the program is clinic-based or employer-based.

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## 1. Introduction

The burden of chronic illness is well documented [1,2] and has been the focus of widespread efforts to redesign the primary care system [3]. In this context, attention to motivating patients to self-manage their chronic conditions has expanded and new models of health care delivery focus on teaching patients with chronic illnesses self-management skills [4–6].

Behind this chronic illness burden, however, lies an even greater pool of people with increasing health risks. In 2007, 72%

of adults in the United States did not have 20 or more minutes of vigorous physical activity three or more days per week [7] and 63% were overweight or obese [8]. Such risks foreshadow an even greater level of disease morbidity in the years to come. To make progress in the battle to reduce the morbidity associated with chronic conditions, it is not sufficient to restrict our understanding of self-management to those who already have chronic disease [9]. Self-management is key not only for chronic conditions but for all the behaviors that can lead to, or can counteract, the likelihood of developing chronic illness.

In health care as in other industries, what gets measured gets managed [10]. To help predict the degree to which patients or employees are activated to manage their health and health care and to assess progress of interventions designed to increase activation, clinicians and employers need new measures. The concept of patient activation is not a new one [11,12], but the concept has not been supported with a validated measure until 2004.

<sup>☆</sup> I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of this story.

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The recently developed Patient Activation Measure (PAM) is based on work in conceptualizing, defining and testing attributes of an activated health consumer [13]. The tool measures the skills, knowledge, beliefs and behaviors that combine to create an activated patient. The PAM has been validated in older populations with chronic conditions [13–16]. Little is known, however, about the relationship of PAM scores to personal characteristics in employed populations and those at risk for developing chronic conditions in the future. Its validation with other healthy behaviors also has been limited.

To date, PAM scores have been positively associated with key process measures and health outcome measures in several studies of older adults with chronic conditions [13,15–17]. New initiatives such as ours seek to use the PAM to assess activation in high-risk individuals, not just those who already have chronic conditions. These expanding applications of PAM indicate a need to understand how activation relates to identifying and engaging individuals within varied populations, especially employed populations.

In this study, we examine employee activation in two industries. We assess the relationship of activation to employee characteristics as well as to enrolling and remaining in health-promotion coaching programs. To further validate the measure, we investigate the relationship of PAM scores to engaging in healthy behaviors, seeking health information, and readiness-to-change.

## 2. Methods

### 2.1. Study design and subjects

Data for this analysis were taken from baseline survey information collected during a randomized, controlled trial in Spring 2005 [18]. The trial involved testing two different health-promotion programs. Participants included employees recruited from two companies: a large, integrated health care system and a national airline. We mailed invitations, consent forms and questionnaires to employees at their worksite ( $n = 1628$ : 832 health care workers, 796 airline reservationists). We gave employees a US\$ 15 incentive for attending onsite health screenings. At the screenings, we obtained employees' clinical measures and collected their completed surveys. Survey and clinical data were obtained from 631 employees, for a response rate of 39%. We had complete PAM information from 625 employees—our analysis is based on this sample.

### 2.2. Measures

The outcome measure, PAM, is a scale assessing patient activation. Developed using Rasch psychometric methods analysis, PAM is an interval-level, unidimensional, Guttman-like measure [19–21]. It comprises 13 items that assess patient knowledge, skill and confidence for self-management. Items range from “When all is said and done, I am the person who is responsible for managing my health” to “I am confident I can maintain lifestyle changes, like diet and exercise, even during times of stress” (Appendix A). Each item has four response options: “disagree strongly,” “disagree,” “agree” and “agree strongly.” The PAM has a theoretical range from 0 to 100. Higher scores indicate greater activation.

#### 2.2.1. Employee characteristics

Independent variables address diverse aspects of demographics, work environment, health risk factors and health status.

*Demographic characteristics* included: age as reported by participant; gender (male or female); race (white or other than

white); education (high school graduate or less, some college or vocational training, college graduate, more than college); family income (less than US\$ 35,000, US\$ 35,000–49,999, US\$ 50,000–74,999, US\$ 75,000–99,999, US\$ 100,000 or more) and marital status (married or other).

*Work environment factors* included: company (health care or airline); job category (professional or other); job satisfaction (very dissatisfied, dissatisfied, neither dissatisfied or satisfied, satisfied and very satisfied); relative hours worked (inverse of absenteeism—actual hours worked/required hours); and presenteeism (self-assessment of job performance in the past four weeks on a scale of 0–10 [0 = worst performance, 10 = best performance]).

*Health risk factors* included: body mass index (BMI) (underweight, normal, overweight or obese); smoking status (current smoker or other); and a composite health risk score (continuous variable) used to determine if study participants were eligible for coaching.

*Health status* was measured using a physical and a mental health summary (from the SF-12<sup>®</sup> Health Survey) [22]; general health status (excellent, very good, good or fair/poor); and the presence of one or more of 10 common chronic conditions.

#### 2.2.2. Validation measures

Independent variables used for validating the PAM scores included: engaging in healthy behaviors, seeking health information and readiness-to-change. The relationship of PAM scores to enrollment by high-risk individuals in health coaching was also assessed.

*Engaging in healthy behaviors* included: number of days of aerobic exercise per week (0–3 days or 4 or more days); frequency of eating breakfast (every day or less than every day); number of servings of fruits and vegetables per day (2 or fewer or 3 or more); having a personal physician or nurse practitioner (yes or no); having taken a health, exercise or fitness class in the past 12 months (yes or no); and current membership in a health club (yes or no).

*Seeking health information* included: importance of Internet as a source of health information (not important, not very important, somewhat important or very important); being able to recognize reliable Web sites with health information (disagree strongly, disagree, agree or agree strongly); use of health or medical books as resources (yes or no); subscription to a health magazine or newsletter (yes or no); knowing where to find information comparing the quality of hospitals (disagree strongly, disagree, agree or agree strongly); knowing how available health plans compare (a lot, fair amount, little or nothing).

*Readiness-to-change* measured interest in living a healthy lifestyle on a scale of 1–5 (1 = no present interest, 2 = plan a change in the next 6 months, 3 = plan to make some changes this month, 4 = recently started making changes, 5 = already regularly living a healthy lifestyle).

*Enrollment and retention in coaching programs* also was evaluated. Employees with high levels of health risk as determined by their composite risk score were invited to enroll in individualized coaching programs. We assessed whether they enrolled (yes or no) and if enrolled, whether they remained in the program (yes or no).

#### 2.3. Data analysis

Bivariate analyses were conducted to study the relationship between PAM and employee characteristics as well as PAM and the validation variables. For continuous measures, such as age, Pearson's correlation was calculated. For two-level categorical variables, such as gender, a two-sample *t*-test was used; ANOVA models were used for categorical variables with more than two levels.

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