



Health behaviour

When activation changes, what else changes? the relationship between change in patient activation measure (PAM) and employees' health status and health behaviors

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ABSTRACT

Objective: To test whether changes in the patient activation measure (PAM) are related to changes in health status and healthy behaviors.

Methods: Data for this secondary analysis were taken from a group-randomized, controlled trial comparing a traditional health promotion program for employees with an activated consumer program and a control program. The study population included 320 employees (with and without chronic disease) from two U.S. companies: a large, integrated health care system and a national airline. Survey and biometric data were collected in Spring 2005 (baseline) and Spring 2007 (follow-up).

Results: Change in PAM was associated with changes in health behaviors at every level (1–4), especially at level 4. Changes related to overall risk score and many of its components: aerobic exercise, safety, cancer risk, stress and mental health. Other changes included frequency of eating breakfast and the likelihood of knowing about health plans and how they compare.

Conclusion: Level 4 of patient activation is not an end-point. People are capable of continuing to make significant change within this level.

Practice implications: Interventions should be designed to encourage movement from lower to higher levels of activation. Even people at the most activated level improve health behaviors.

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1. Introduction

Health care providers are increasingly recognizing that advances in medical technologies are not enough to improve the quality and length of people's lives. Individuals must be active participants in their health care to reap the benefits of these advances [1]. The need for greater patient involvement will be magnified as an aging population inexorably produces a higher prevalence of chronic conditions and as health care costs increasingly shift to the individual. This shift in accountability for self-health management will lead to a need for individuals to engage in health care consumer behaviors and self-care skills that many may not be ready to assume.

The complexity of understanding and improving health-related behaviors cannot be underestimated given the many factors that influence how individuals change behaviors to improve their health. Numerous psychological, behavioral and sociological models have

been developed to help health education practitioners understand how individuals make decisions related to their health [2]. Concepts of *patient activation* have provided an additional framework with which to understand an individual's capacity for health behavior change. Patient activation is defined as an individual's ability and willingness to take on the role of managing his or her health and health care [3]. A relatively new construct, the patient activation measure (PAM) was developed to assess an individual's knowledge, skills and confidence in managing his or her health [4]. According to Hibbard and colleagues, activation occurs at four levels. Level 1: does not yet grasp the need to play an active role in personal health. Level 2: lacks knowledge and confidence to act. Level 3: is beginning to take action. Level 4: has adopted new behaviors but may not be able to maintain them under stress.

Individuals with higher PAM scores have been shown to be more likely to perform self-management behaviors, use self-management services and report higher medication adherence [5]. Findings from one longitudinal study of individuals with chronic disease revealed that positive changes in activation were related to positive changes in a variety of self-management skills such as engaging in regular exercise, managing stress, paying attention to diet and taking diabetes medications [6]. Further analysis of the

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PAM scores in a population with at least one chronic disease has shown that activation level is correlated with disease-specific behaviors. Highly activated individuals with diabetes were found to be more likely to take medication as directed, read food labels and read side effects when prescribed a new medication. Similar behaviors were observed in highly activated patients with cardiovascular disease [7]. In a study of a worksite population, the PAM was shown to have a strong positive relationship with measures of health behavior, health information-seeking and readiness-to-change [8].

To extend understanding of the PAM, we used longitudinal data to investigate how changes in PAM scores are related to changes in health behavior and health status in an employer-based population of individuals with and without chronic disease. In addition, we examined how changes in activation levels contributed to changes in health status and behavior at each of the four levels of activation.

2. Methods

2.1. Study design and subjects

Data for this secondary analysis were taken from survey and biometric information collected during a group-randomized, controlled trial in Spring 2005 (baseline) and Spring 2007 (follow-up) [9]. This trial tested two different employer-based health-promotion programs—a traditional health promotion program and an activated consumer program—compared with a control program. The traditional health improvement program topics included physical activity, nutrition, injury prevention and stress management. Topics were offered through seminars and interactive educational campaigns. Study staff worked with site managers to improve environmental health factors such as food service options and maps for walking routes. High risk employees in the traditional intervention received health coaching that was aimed at providing self-management support to increase skill and confidence in managing health problems.

The activated consumer program topics included: evaluating sources of health information, choosing a health benefits plan, becoming familiar with preventive service guidelines and understanding the risks of not taking medications as prescribed. Like the traditional health improvement program, topics were delivered through seminars, interoffice communications and campaigns on consumerism. High risk employees in the activated consumer program received health coaching that focused on helping participants take responsibility for seeking out resources and information to better manage their health.

Participants included employees recruited from selected sites within two companies in the northern Midwest of the USA: a large, integrated health care system and a national airline. We mailed invitations, consent forms and questionnaires (all in English) to employees at their worksite ($N = 1628$: 832 health care workers, 796 airline reservationists). We gave employees a \$15 incentive to attend onsite health screenings. At baseline, we obtained survey and clinical data from 631 employees, for a response rate of 39%. These 631 employees were enrolled in the study. At the screenings, we obtained biometric measures and collected completed questionnaires as described below. At follow-up, we collected survey and clinical data from 320 of the enrolled employees, for a response rate of 51%.

2.2. Independent variable

The primary independent variable, change in the PAM score, was calculated as the difference between PAM scores at baseline and at follow-up. PAM is a scale assessing activation for managing one's own health and health care. The PAM scale was developed

using Rasch psychometric analysis, a method in which an ordered response set was created for items so that a greater score is associated with a higher level of the variable being measured (activation). PAM is an interval-level, unidimensional, Guttman-like measure [10–12]. It comprises 13 items that assess people's 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." 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 higher activation, and increases in scores over time suggest improvements in activation. Hibbard conceived that activation was a developmental process and the PAM is scaled such that the summed overall score from all items represents the person's place within the levels of activation (from 1, lack of belief that the individual controls his or her health to a maximum of 4, adaptation of new behaviors but may not be able to maintain them under stress) [4].

2.3. Dependent variables

Dependent variables addressed changes from baseline to follow-up for health risks, clinical markers, readiness-to-change, healthy behaviors, health information-seeking and self-reported productivity.

2.3.1. Health risks

Health risks were measured with a summary health risk score, which is a composite of self-reported information and clinical measures. Self-reported health risks were collected using the Personal Wellness Profile™ (PWP). This 39-item instrument assesses lifestyle factors, such as exercise, nutrition, stress and tobacco use [13]. Study participants attended an on-site screening at which clinical measures were collected including, blood pressure, height, weight and blood laboratory values (non-fasting total cholesterol, non-fasting high density lipoprotein and glucose levels.) Procedures for blood finger-sticks met Clinical Laboratory Improvement Amendment requirements [14]. Blood pressure measurement was taken using a regular sphygmomanometer and followed the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure measurement standards [15]. Systolic and diastolic blood pressure, height and weight, and total cholesterol and density lipoprotein were included in the PWP for calculating an overall health risk score.

Specific components of the summary health risk score were analyzed separately. These specific risks, defined below, included BMI, aerobic exercise, safety, cancer risk, coronary risk, overall stress, and physical and mental health.

BMI was calculated using height and weight from the onsite screening or as reported by participants if they did not attend the screening.

Aerobic exercise was defined as 30 min of aerobic exercise three or more times per week.

Safety was defined as an average of measures of using a seat belt, bike helmet and smoke detector as well as of lifting technique and drinking and driving.

Cancer risk was calculated considering hereditary factors, tobacco use, radiation and sun exposure, dietary factors, age, BMI and cancer prevention practices.

Coronary risk was defined as having a personal history of coronary heart or peripheral artery disease or other risk factors—age, family history of premature CHD, smoking, hypertension, elevated lipids, lower HDL cholesterol, elevated glucose or abnormal ECG.

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