



## **Inadequate Health Literacy Independently Predicts All-Cause and Cardiovascular Death Among Elderly People**

### **Objective:**

To determine whether low health literacy levels independently predict overall and cause-specific mortality.

### **Background:**

Cross-sectional studies have demonstrated that people with low levels of health literacy (i.e., those who are unable to read and understand basic health-related information such as prescription bottles and appointment cards) have less knowledge about health, poorer self-management of chronic diseases, lower use of preventive services, and worse health than those with adequate levels of health literacy.

The authors conducted a prospective cohort study of 3,260 Medicare managed-care enrollees in 4 metropolitan areas. They interviewed the participants in 1997 to determine demographic characteristics, physical and mental health status, and health behaviors. Participants completed the shortened version of the Test of Functional Health Literacy in Adults, which measures health literacy through reading fluency. The authors tracked total and cause-specific (cardiovascular, cancer, and other) deaths through 2003 using the National Death Index.

### **Findings:**

- 1 The crude mortality rates for participants with adequate, marginal, and inadequate health literacy were 18.9%, 28.7%, and 39.4%, respectively ( $p < .001$ ). After adjusting for demographics, socioeconomic status, and baseline health, the hazard ratio for all-cause mortality was 1.52 for participants with inadequate health literacy compared to those with adequate health literacy.
- 2 Inadequate health literacy predicted higher risk-adjusted rates of cardiovascular death but not of cancer death.
- 3 Years of school completed was only weakly predictive of mortality.

### **Ix Implications:**

- 1 The association between low health literacy and adverse health outcomes probably results from a variety of mechanisms that have a cumulative effect, including less health knowledge, poorer self-management skills, poorer adherence to medication regimens, and lower use of screenings and vaccinations. Interventions to reduce this association will likely need to be comprehensive and multi-faceted.
- 2 Years of school completed is an inaccurate measure of educational attainment (especially in the elderly, for whom it fails to capture lifelong learning or age-related declines in reading fluency).
- 3 Reading fluency should be used to tailor Ix solutions.

### **Citation:**

Baker, D. W., et al. (2007). Health literacy and mortality among elderly persons. *Archives of Internal Medicine*, 167(14), 1503-1509.



## **Increases in Patient Activation Result in Improved Self-Management Behavior**

### **Objectives:**

1. To determine whether patient activation is a changing or changeable characteristic; and
2. To assess whether changes in activation are accompanied by changes in health behavior.

### **Background:**

Patient activation is a key concept in the chronic care model, but researchers' inability to measure it has limited the degree to which activation can be used in interventions to improve health. Recent research has shown that the Patient Activation Measure (PAM), which measures patient knowledge, skill, and confidence in self-management, can predict healthy behaviors, disease-specific self-management behaviors, and consumeristic behaviors (e.g., reading about the risks and benefits of a new treatment or drug).

The authors collected survey data from 479 participants 50 to 70 years old (each of whom had at least one chronic illness) at baseline, 6 weeks, and 6 months. The intervention group received the Chronic Disease Self-Management Program; the control group received no intervention.

### **Findings:**

- 1 Positive change in activation, as measured by the PAM, was related to a positive change in a number of self-management behaviors, even when the behavior was not being performed at baseline. When the behavior was present at baseline, increased activation was related to participants' maintaining a relatively high level of this behavior over time.
- 2 Participants with depressive symptoms were much less likely to show improvement in activation levels and self-management behaviors.

### **Ix Implications:**

- 1 Activation is an important intermediate outcome measure for health improvement.
- 2 The PAM can be used to segment large populations, target interventions to people with clinical risk factors and insufficient self-management skills, and further tailor these interventions to individuals' needs.
- 3 The PAM identifies four stages of activation; it is likely that different Ix interventions will be required to help patients move between the earlier and later stages.
- 4 Screening and treatment for clinical and subclinical depression is likely to improve the success of Ix interventions intended to increase activation.

### **Citation:**

Hibbard, J. H., et al. (2007). Self management and health care utilization: Do increases in patient activation result in improved self-management behaviors? *Health Services Research*, 42(4), 1443-1463.

## **Internet and Mobile Phone Support Can Help Healthy Adults Increase and Maintain Their Physical Activity Levels**

### **Objective:**

To evaluate the impact of a fully automated Internet and mobile phone-based physical activity program on a group of healthy adults. The primary outcome variable was change in moderate physical activity.

### **Background:**

Internet-based behavioral change interventions are potentially cost-effective, as they minimize face-to-face interaction and increase accessibility. However, Internet- and e-mail-based systems can fail to maintain participants' interest. No prior research has evaluated the effectiveness of an Internet-based system that gives participants real-time objective feedback on physical activity over several months.

The authors tested a fully-automated Internet, e-mail, and mobile phone system that used wrist-worn accelerometers to measure participants' physical activity levels and provide them with feedback. Participants (77 healthy adults 30 to 55 years old) received accelerometers and Bluetooth-compatible mobile phones. The test group (n = 47) received: tailored solutions for perceived barriers; a schedule to plan weekly exercise, with e-mail and mobile phone reminders; feedback on their level of activity; and access to a message board to share their experiences.

### **Findings:**

- 1 The average increase of the test group over the control group in accelerometer-measured physical activity was 2 hours and 18 minutes per week. Test group participants also reported a significantly greater increase from baseline in perceived control and intention to exercise.
- 2 More than 85% of test participants logged on to the Internet site each week during the first 4 weeks of the study. Internet access plateaued at about 75% during the last 5 weeks.
- 3 The most popular system components were the activity charts (showing accelerometer feedback), the weekly exercise planner, and the chat-room style message board.
- 4 Comments on the message board indicated that participants found the system motivational and educational; the activity charts allowed them to link periods of high physical activity to everyday events.

### **Ix Implications:**

- 1 Fully automated behavioral change Ix interventions can be successful if participants are adequately engaged.
- 2 Greater awareness of high-activity periods in everyday routines may help people capitalize on opportunities to increase their overall physical activity levels; normal activities such as walking are generally considered most effective in altering a sedentary lifestyle.
- 3 All parts of the system were used by at least one third of participants, implying that individuals will require a selection of support tools to achieve behavioral change.

### **Citation:**

Hurling, R., et al. (2007). Using Internet and mobile phone technology to deliver an automated physical activity program: Randomized controlled trial. *Journal of Medical Internet Research*, 9(2):e7; <http://www.jmir.org/2007/2/e7/>