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Entertainment education for prostate cancer screening: A randomized trial among primary care patients with low health literacy

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ABSTRACT

Objective: To evaluate an entertainment-based patient decision aid for prostate cancer screening among patients with low or high health literacy.
Methods: Male primary care patients from two clinical sites, one characterized as serving patients with low health literacy ($n = 149$) and the second as serving patients with high health literacy ($n = 301$), were randomized to receive an entertainment-based decision aid for prostate cancer screening or an audiobooklet-control aid with the same learner content but without the entertainment features. Postintervention and 2-week follow-up assessments were conducted.
Results: Patients at the low-literacy site were more engaged with the entertainment-based aid than patients at the high-literacy site. Overall, knowledge improved for all patients. Among patients at the low-literacy site, the entertainment-based aid was associated with lower decisional conflict and greater self-advocacy (i.e., mastering and obtaining information about screening) when compared to patients given the audiobooklet. No differences between the aids were observed for patients at the high-literacy site.
Conclusion: Entertainment education may be an effective strategy for promoting informed decision making about prostate cancer screening among patients with lower health literacy.
Practice implications: As barriers to implementing computer-based patient decision support programs decrease, alternative models for delivering these programs should be explored.

1. Introduction

Leading professional organizations recommend that men be educated about the potential benefits and harms of prostate cancer screening before they undergo testing [1–3]. Such recommendations coincide with the development of many different decision-support tools, or decision aids, to assist men in making informed decisions about screening [4]. A recent systematic review concluded that decision aids increase patients' knowledge of prostate cancer and screening, lead patients to want a more active role in decision making, and leave patients more confident about their decisions [5].

Providing decision support to patients with low health literacy is a challenging task [6,7]. Reading level clearly affects health literacy. In the United States, 26% of the adult population reads at or below the 6th grade level, and another 20% reads at the 7th or 8th grade level [8]. Low health literacy is more prevalent among African Americans, persons with fewer than 12 years of schooling, persons whose primary language is Spanish, and persons older than 50 years [8]. According to the Institute of Medicine, health literacy includes skills beyond reading and writing – such as numeracy, speech and speech comprehension, and basic math calculation – and relies on cultural and conceptual knowledge [9]. Current decision aids do not consider these additional skills and, for this reason, are of limited utility to a large segment of the adult population.

A promising approach to the delivery of decision support to patients with low health literacy relies on interactive multimedia (IMM) to present educational messages within the context of an

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entertaining story [10–13]. These new media technologies are designed to enhance the engagement of users through real-life experiences and to address their interests and emotions [14–16]. Incorporating entertainment elements into programs targeted to persons with lower health literacy and poor computer skills may promote the engagement of users [17]. Entertainment-education messages have been shown to be highly effective in changing the health behaviors of low-literacy audiences who may not be initially motivated to process a message [12,18]. Nevertheless, the use of IMM and entertainment education to promote informed decision making has been limited [19–21].

In this study of informed decision making for prostate cancer screening among primary care patients, we compared a computerized, interactive, multimedia patient decision aid that includes an entertaining soap-operatic component to an audiobooklet without the interactivity and entertainment features. Two patient groups representing different health-literacy levels were targeted, and the performance of the aids was compared between the low and high health literacy groups.

2. Methods

The study design was a randomized, controlled trial conducted in two clinical settings. Patients were randomized separately in each setting using permuted blocks. An audiobooklet was used as the active control. The Institutional Review Boards of Baylor College of Medicine and the Harris County Hospital District approved the project.

2.1. Setting

The first clinical setting (low health literacy site) was a general medicine clinic in a publicly funded hospital operated by a county health district. Patients served at this site do not have medical insurance, and many have a high school education or less. The second clinical setting (high health literacy site) was a university-affiliated family medicine clinic that serves a generally well-educated and privately insured patient population. Data collection began in January 2004, and continued through February 2006.

2.2. Subjects

Eligible subjects were male primary care patients who visited either clinic for nonacute care, who had no history of prostate cancer, and who were 50–70 years of age if not African American or were 40–70 years of age if African American.

2.3. Flow of the study

The baseline questionnaire, decision aids, and postintervention evaluations were completed in conjunction with office visits at the study sites. Patients were contacted by telephone before scheduled office visits and in the waiting areas of the study sites. After assessing eligibility and procuring informed consent, patients were randomized to receive either the entertainment-based or the audiobooklet-control aid. The baseline questionnaire was administered to all study subjects; in addition, it was read by a research assistant to all subjects at the low-literacy site. Subjects then completed the decision aid (all subjects completed their assigned aid). Research assistants were available to assist patients with using the aids. Before leaving the study site, subjects also completed a postintervention evaluation. Two weeks after the office visit, subjects completed a follow-up assessment by telephone or by a mailed questionnaire. Research assistants were not blinded to the study.

2.4. Intervention and control decision aids

Design of the intervention decision aid followed the Edutainment Decision Aid Model (EDAM) developed by Jibaja-Weiss and Volk [10]. The EDAM is a tool that helps designers of decision aids combine a carefully crafted storyline with factual medical information. The design objectives were to create a multimedia computer-based aid that considers the limitations of low-literate patients, including naïve computer users, through a user-friendly interface that is similar to a dramatic television program. The aid was structured into two major components: didactic soap-opera episodes integrated with interactive learning modules (ILMs) that complement the content of the episodes. The soap-opera genre was selected because it is a familiar, nonthreatening, and engaging environment that allows behaviors desirable for informed decision making to be modeled, with the goal of promoting the self-efficacy of the viewer [13,22]. The graphical user interface included user-friendly screen backgrounds and illustrations depicting familiar environments (e.g., at home watching television, in a lunchroom at work). Navigational instructions were provided throughout the program with voice-over narration.

The ethnicity of the main character was tailored to the viewer through a series of questions completed upon entering the program. The cast was multiethnic and blue-collar, reflecting the patients targeted at the low-literacy site. The storyline of the soap opera took the main character through the process of making a decision about prostate cancer screening. The soap-operatic segments were interwoven with ILMs that communicated key factual information about prostate cancer and screening. The six ILMs were: (1) basic facts about the prostate; (2) risk factors for prostate cancer; (3) screening tests for prostate cancer; (4) treatment options for prostate cancer; (5) complications of prostate cancer treatment; and (6) a review of the issues (a diagram of the program flow can be found elsewhere [10]). The 6th ILM, *Prostate Cancer Testing Decision Review*, included a review of the main points of the previous ILMs interleaved with testimonials from several celebrities about the importance of learning about prostate cancer and screening. The key messages from the review module are given in an Appendix A to this article. Celebrity testimonials emphasized the importance of learning about prostate cancer screening, but offered no endorsement of screening. The final main section of the program was a values-clarification exercise that used a social-matching scenario wherein the viewer is asked to identify a character who most resembles how he feels (i.e., "Pick who is most like you").

Table 1 summarizes the key design differences between the entertainment-based and the audiobooklet-control aids. The audiobooklet contained the same factual content as the entertainment-based aid, including screen shots taken from the ILMs, and was accompanied by an audio CD with narration. The audiobooklet lacked the interactivity, entertainment component (i.e., soap operas), testimonials, and values-clarification exercise.

2.5. Measures

2.5.1. Acceptability of the decision aids

The postevaluation included indicators from the Ottawa Decision Aid Centre on acceptability of decision aids: ratings of the amount of information, length of the programs, clarity of the presentation, and balance for or against screening [23].

2.5.2. Engagement with the entertainment-based aid

To more fully explore the users' experience with the entertainment-based aid, subjects answered 16 questions about the content and presentation of the aid during the postintervention