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## Review Article

## Intervention Strategies Based on Information-Motivation-Behavioral Skills Model for Health Behavior Change: A Systematic Review

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## SUMMARY

**Purpose:** This study systematically reviewed research on behavioral interventions based on the information-motivation-behavioral skills (IMB) model to investigate specific intervention strategies that focus on information, motivation, and behavioral skills and to evaluate their effectiveness for people with chronic diseases.

**Methods:** A systematic review was conducted in accordance with the guidelines of both the National Evidence-based Healthcare Collaborating Agency and Im and Chang. A literature search was conducted using electronic databases. Randomized controlled trials that tested behavioral interventions based on the IMB model for promoting health behaviors among people with chronic diseases were included. Four investigators independently reviewed the studies and assessed the quality of each study. A narrative synthesis was used.

**Results:** A total of 12 studies were included in the review. Nine studies investigated patients with HIV/AIDS. The most frequently used intervention strategies were instructional pamphlets for the information construct, motivational interviewing techniques for the motivation construct, and instruction or role playing for the behavioral skills construct. Ten studies reported significant behavior changes at the first post-intervention assessment.

**Conclusion:** This review indicates the potential strength of the IMB model as a theoretical framework to develop behavioral interventions. The specific integration strategies delineated for each construct of the model can be utilized to design model-based interventions.

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## Introduction

With the rapid worldwide increase in the prevalence of chronic diseases such as diabetes, hypertension, asthma, and HIV/AIDS, efforts have been made to develop and test appropriate interventions for preventing disease-related complications and improving the quality of life for patients with these diseases (Martin, Haskard-Zolneierek, & DiMatteo, 2010; Sabaté, 2003). Because behavioral changes are a core component of self-management and adherence, researchers and health care providers in health-related fields have

emphasized the importance of behavior change (Newman, Steed, & Mulligan, 2008; Shumaker, Ockene, & Rieker, 2009). Consequently, several studies of people with chronic diseases have focused on behavioral interventions to improve self-management or adherence (Sabaté). Therefore, researchers developing behavioral interventions for individuals with chronic diseases have paid attention to behavioral theories, which can be used to increase the effectiveness and efficacy of behavioral interventions (Ammerman, Lindquist, Lohr, & Hersey, 2002; Martin et al., 2010; Noar, Benac, & Harris, 2007).

Behavioral theories such as the health belief model, the theory of reasoned action, the theory of planned behavior, the transtheoretical model, and the information-motivation-behavioral skills (IMB) model, all of which specify determinants of behavior that are potentially amenable to change, have frequently been used to develop behavioral interventions (Newman et al., 2008). In particular, the IMB

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model has received considerable attention because it not only provides a relatively simple explanation for complex health behaviors but also identifies constructs (including information, motivation, and behavioral skills) that are needed for successful self-management or adherence among patients with chronic disease (Deakin, McShane, Cade, & Williams, 2005; Sabaté, 2003).

The IMB model, proposed by Fisher and Fisher (1992) to explain HIV-related behaviors, recognizes three constructs—information, motivation, and behavioral skills—needed to engage in a given health behavior, as specific individual determinants of behavior and behavioral change (Fisher & Fisher; Norton, 2009). According to this model, information is defined as “an initial prerequisite for enacting a health behavior” (Misovich, Martinez, Fisher, Bryan, & Catapano, 2003). This includes not only behavior-related information but also myths/heuristics that permit automatic or cognitively effortless behavior-related decision-making (Fisher, Fisher, & Harman, 2003; Norton). Motivation is composed of two factors: personal motivation, which includes beliefs about the intervention outcome and attitudes toward a particular health behavior (Fisher et al., 2003; Osborn, 2006), and social motivation, which includes the perceived social support or social norm for engaging in a particular behavior (Fisher et al.). Behavioral skills, the third determinant in the IMB model, are skills necessary for performing a particular health behavior. To facilitate behavioral change, behavioral skills in the IMB model emphasize the enhancement of an individual's objective skills and increasing perceived self-efficacy (Fisher et al.). As shown in Figure 1, information and motivation have direct effects on both behavioral skills and health behavior. Additionally, behavioral skills exert direct effects on health behavior (Fisher et al.).

Information, motivation, and behavioral skills as well as explicit relationships among these constructs are considered generalizable determinants of health behaviors. Therefore, the IMB model has been used as a theoretical basis for behavioral intervention studies across a variety of health behaviors (Carey et al., 1997; Fisher, Fisher, & Shuper, 2009; Fisher, Fisher, Amico, & Harman, 2006). However, though the number of behavioral interventions based on the IMB model has increased in fields related to health behavior changes, there is a need to delineate specific strategies that have been integrated into IMB model-based interventions and to find evidence of the effectiveness of the model in facilitating behavioral change for patients with chronic diseases. For this reason, the current study systematically reviewed studies on behavioral interventions based on the IMB model targeting patients with chronic diseases.

## Methods

This systematic review was conducted in accordance with the guidelines of both the National Evidence-based Healthcare Collaborating Agency (Kim et al., 2011) and Im and Chang (2012).

### Review questions

We addressed three review questions using the PICOS framework (Participants: people with chronic diseases; Interventions: behavioral interventions based on the IMB model; Comparators: none; Outcomes: behavioral and biological change; Study design: randomized controlled trials) (Centre for Reviews and Dissemination, 2008). Our research questions were as follows:

- (a) What kinds of behaviors were targeted for change?
- (b) How were the IMB model constructs (information, motivation, and behavioral skills) integrated into behavioral interventions, that is, what methods did the interventions employ for developing these constructs?

- (c) What variables were used to evaluate outcomes, and did the interventions successfully induce changes in behavior?

### Search strategies

To identify relevant studies, a search was conducted for articles that were (a) written in English or Korean and (b) published between 2000 and 2012 in peer-reviewed journals or as dissertations. A number of electronic databases were used, including the Cumulative Index for Nursing and Allied Health Literature (CINAHL), PubMed, ProQuest (including the ProQuest Dissertation and Theses Database), Google Scholar, and the Research and Information Sharing Service (RISS) for Korean studies. Combinations of keywords including “health”, “behavior”, “information”, “motivation”, and “behavioral skills” were used to search each database. Reference lists and bibliographies of the retrieved studies were searched. Appropriate publications were included in our analysis when they met the inclusion criteria. Gray literature, such as conference proceedings and government reports, was not included.

### Selection of studies

The inclusion criteria used to select appropriate publications for the systematic review were as follows:

#### Types of studies

Randomized controlled trials that were (a) clearly described by the study authors as behavioral interventions based on the IMB model, (b) designed to test interventions, and (c) focused on health behaviors, including self-management and adherence, in patients with chronic diseases were included.

#### Types of participants

Studies with participants who were 18 years and older with chronic diseases were included.

#### Types of interventions

Behavioral interventions based on the IMB model that were delivered by health care providers and that were intended for people with chronic diseases were included. Intervention studies using at least two constructs of the IMB model (e.g., information and motivation) were also considered.

#### Types of outcomes

Primary outcomes of the studies were effects of the interventions, which were evaluated using both behavioral variables (with data from self-reported questionnaires) and biological variables (e.g., HIV viral load or HbA1c levels)

A two-step process was used to select studies for further analysis. First, the abstracts of all the retrieved studies were independently reviewed by four investigators. When the abstracts indicated that the studies were (a) described by the study authors as behavioral interventions based on the IMB model, (b) focused on health behaviors, (c) designed to test interventions, and (d) aimed at persons aged 18 years or older, the studies were included in the second step of the review process. Second, the same four investigators independently reviewed the full text of the selected studies. Studies identified as randomized controlled trials that focused on adherence related to chronic diseases were selected for the systematic review. Any disagreements between investigators were resolved through discussion.

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