

Letter to Editor**Theory based health education: Application of health belief model for Iranian patients with myocardial infarction**

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I read the paper by Abbaszadeh et al with great curiosity because of my interest in any study with a health behavior as the "outcome".¹ In the setting of myocardial infarction (MI), this controlled study documents a decrease in barriers and an increase in knowledge and perceived benefits of controlling diet and physical activity following the use of video-CD (VCD). Using a conceptual model based on the Health Belief Model (HBM), they measured outcomes at baseline and 45 days after. The advantages of the study include applying theory-based intervention, controlled design, randomization, and attempts to increase the validity of the questionnaire. Generally, such reports in a new special clinical setting are welcomed. However, I have a few points of criticism, related to the methodology, statistical analysis, and presentation of results. After talking about my critical points, I will discuss health behaviors, HBM, and some of the current challenges in the field. Lastly, as the study has used media for health education, I discuss the possibility of tailoring within media based health education.

From a methodological point of view, first of all, although groups are comparable by the means of socio-demographic confounders and baseline outcomes, severity of disease could still act as an unmeasured confounder. Profile of MI risk factors and duration of ischemic heart disease are not compared at baseline. My second concern refers to the report on the detail of the intervention. We need more detailed information about the content and the length of the video. A content analysis by means of motivational or fear arousal approach is necessary. As the authors mentioned, patients were allowed to watch the VCD more than once. Unfortunately, the number of times the video is seen is not a variable in this study. If we are unaware of the

dose of our intervention, this could challenge the applicability of the findings.

I also have a concern about the implemented statistical approach. The authors have reported between-group, but not within-group comparisons; the efficacy of training is based on non-significant and significant differences in pre- and post-intervention outcomes, respectively; and the P values for within-group changes in outcomes are missing.

A common problem with prospective studies is failure to report loss to follow-up. Thus, we do not know how many patients left the study, and why. CONSORT is a useful reporting guideline. We also do not receive information about the missing data. However, I acknowledge the word limit, as the paper was published as a "short communication".

My final concern is about the exact meaning of perceived severity and susceptibility in patients who have experienced MI. Is it about recurrence of MI, or its consequences? This is not a problem for barriers, knowledge, and perceived benefit. The study would also be more informative if it had measured the "behavior" itself, and if it assessed the possible inter-associations between HBM constructs in this special setting.

The general term of health behavior covers a wide range of behaviors- from unprotected intercourse of a sex worker, to non-adherence to medication by a patient, or one's decision to use health care. Janz and Becker categorized these behaviors under the following three headings respectively: 1) preventive health behaviors, 2) sick-role behaviors, and 3) health care use.²

Many health behavior theories have concepts in common. HBM, developed by Becker, has roots in Value Expectancy Theory,³ and is a basis for the Trans-Theoretical Model.⁴ Ac-

According to the HBM, people will perform a given behavior if they themselves see that it will provide benefits according to their perception of their situation and needs. The Trans-Theoretical Model asserts that people's behavior is a result of their decision balance, an ongoing challenge between their pros and cons surrounding certain behaviors.

Although the HBM is not the only model frequently used to explain health behavior, it is the most applied one. On April 2011, a simple search in Pubmed for HBM resulted in about 3,800 papers, which is considerably higher than any other behavior theory, including the Social Cognitive Theory, Theory of Planned Behavior, or the Trans-Theoretical Model. This is partly because the HBM was one of the first theories in the field, developed in 1950s.⁵⁻⁷ This is also because the HBM has proven to be applicable to behaviors in different settings, from public health⁸ to internal medicine⁹ and surgery.¹⁰

But why is HBM not optimal when our aim is to predict, not to explain a behavior and why is it not as useful as some other models in some instances?¹¹ Based on the literature, HBM constructs explain only a trivial amount of variance of the behaviors- about 10-20%. For the answer, we should look for some confounders. Literature shows that risk perception is influenced by affect,¹² memory,¹³ and previous experience with that behavior.¹⁴ Kahneman and Tversky explained how cognitive biases affect decision making,^{15,16} and we know decision-making is the back bone of HBM.¹⁷ Interestingly, such biases seem to exist in different settings, from preventive behaviors¹⁸ to health care use.¹⁹

Based on the results, the authors are not only inviting health educators to use HBM based interventions, they also suggest media for that purpose. To improve health behaviors, media is an inexpensive modality which can target a high number of people. Media also provides the option of tailoring health education.^{20,21} Tailoring refers to any method of individualization of communications based on who the target audience is. There is evidence that a tailored approach creates a higher impact from the communication.^{22,23} The authors might find the works done by the University of Michigan's Health Media Research Laboratory,²⁴ especially their e-Health interventions²⁵ interesting.

This study asks the general question of whether a theory based health intervention works or not. Many reviews have answered "yes" to this question. However, the as-yet unanswered questions are how, and in whom they work best? The "how" asks for the pathway or mechanism- or the most effective ingredient of the intervention, and "whom" asks for the people who most benefit from it. These questions come from the mediation and moderation concepts, respectively.^{23,26,27}

I hope the authors have found some useful points in my letter. They have already published health behavior studies using HBM in other settings.²⁸⁻³⁰ The scientific community has learned about HBM theory from Professor Becker, who lived, taught, and passed away in Ann Arbor.³¹ Now, several years later, I am writing this letter from his city, about his theory, from his department. God bless him.

Shervin Assari^a

Conflict of Interests

The author has no conflict of interests.

^a Department of health behavior and health education, School of Public Health, University of Michigan, Ann Arbor, MI, United States and Universal Network for Health Information Dissemination and Exchange (UNHIDE)

* Corresponding Author
E-mail: assari@umich.edu

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