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Integrating theory into community interventions to reduce liver cancer disparities: The Health Behavior Framework

Roshan Bastani [a,*], Beth A. Glenn [a], Vicky M. Taylor [b], Moon S. Chen Jr. [c], Tung T. Nguyen [d], Susan L. Stewart [d], Annette E. Maxwell [a]

[a] School of Public Health, and Jonsson Comprehensive Cancer Center, University of California, 650 Charles Young Dr. South, Room A2-125, CHS, Los Angeles, CA 90095-6900, USA
[b] Cancer Prevention Program, Fred Hutchinson Cancer Research Center, Seattle, WA, USA
[c] Department of Internal Medicine, University of California, Davis, CA, USA
[d] Department of Medicine, University of California, San Francisco, CA, USA

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ABSTRACT

Mitigating the unequal burden of cancer often involves conducting community-based trials to develop effective intervention strategies to promote cancer-related health behaviors. However, this is challenging due to the simultaneous influence of numerous factors, at multiple levels in the socio-ecological context, on health behavior. A sound conceptual framework can bring order to this complex environment and provide a roadmap for systematically addressing the multiple determinants of the behavior in question. This paper describes the application of The Health Behavior Framework, an integrative *conceptual* model, in an ongoing Program Project, "Liver Cancer Control Interventions for Asian-Americans." The Framework has been integral to shaping all aspects of the three component research trials from selection of the study designs to development of the interventions and data collection instruments. We advocate universal adoption of theory into community-based intervention research as a way to accelerate our ability to develop effective interventions and facilitate synthesis of study results across populations and behavioral outcomes: critical steps in advancing the field of health disparities research.

Introduction

It is widely recognized that an important approach to mitigating the unequal burden of cancer in certain segments of our population involves the conduct of community-based trials to develop effective intervention strategies. Many such trials focus on health behaviors such as cancer screening, healthy nutrition and sun protection practices. However, achieving health behavior change is a complex process. This is due to the fact that numerous factors at the level of the individual, the health care system and the broader geographic, social and political environment interact in complex ways to influence the behavior in question.

A sound conceptual framework can be a critical asset for achieving order in this complex environment, and can provide a roadmap for systematically addressing the multiple determinants of the health behavior in which change is desired. Theory-guided research has many advantages. It allows for a more systematic approach to building the knowledge base and increased comparability of results across studies, populations, and health behaviors. Integration of theory into research also allows for the development of testable hypotheses, the examination of complex connections and pathways among predictors and target outcomes, and can lead to a more orderly approach to intervention development.

This paper will discuss the value of incorporating a conceptual/theoretical perspective into community-based trials to reduce cancer disparities including the planning, implementation and data interpretation stages of research. The Health Behavior Framework (HBF), a *conceptual* model developed at the University of California Los Angeles (Bastani et al., 1999, 2001, 2007), will be used to illustrate these points. This framework is being utilized in an ongoing Program Project, *Liver Cancer Control Interventions for Asian-Americans* that includes three controlled trials designed to increase receipt of hepatitis B serological testing among Vietnamese, Hmong and Korean populations in California. We will utilize this example to illustrate the value of a theory guided approach in community trials.

Overview of the Health Behavior Framework

The Health Behavior Framework (Fig. 1) is based on the premise that we can only influence multi-faceted behaviors by using a multi-dimensional model derived from varying theoretical orientations. Thus, the HBF represents a synthesis of some of the major theoretical formulations in the area of health behavior, such as Social Cognitive Theory (Bandura, 1989, 2004), the Health Belief Model (Becker and

* Corresponding author. Fax: +1 310 206 3566.
E-mail address: bastani@ucla.edu (R. Bastani).

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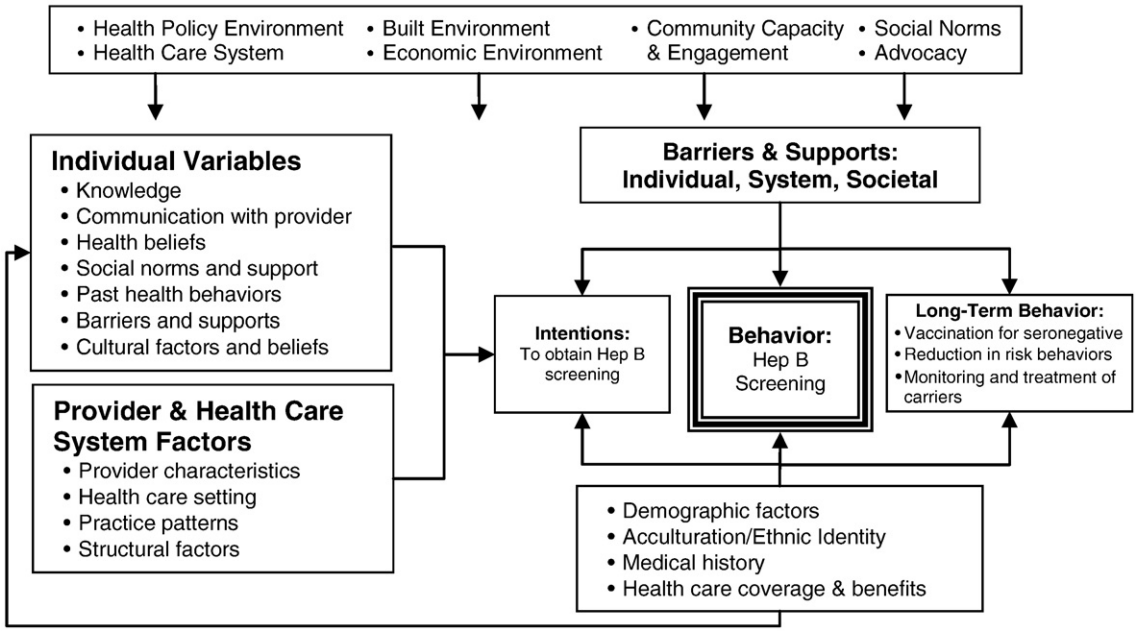

Fig. 1. Health Behavior Framework.

Maiman, 1974), the Theory of Planned Behavior (Ajzen 2002, Madden et al., 1992, Ajzen and Madden, 1986; Fishbein and Ajzen, 1975), the Transtheoretical Model of Change (Prochaska and DiClemente, 1983; Prochaska, 1992), and Social Influence Theory (Greer, 1988; Lomas and Haynes, 1988; Mittman et al., 1992). In addition, the model considers the context within which the desired behavior and behavior change are enacted, including characteristics of the provider and the health care setting (Wagner, 1998; Zapka and Lemon, 2004), as well as larger community and societal influences (Ponce et al., 2005; Babey et al., 2008).

The HBF assumes that individual variables and provider and health care system factors influence behavioral intentions which in turn influence health behavior. Intentions do not automatically translate into behavior. Rather, this connection depends on the absence of barriers and/or presence of supports which may function at the level of the individual (e.g., cultural beliefs), the health system (e.g., practice patterns), or society (e.g., impoverished neighborhood). Supports and barriers may also bypass intentions and exert direct influence on health behaviors. In addition, the model considers the broader context within which the desired behavior and behavior change are enacted. These are the broader socio-ecological conditions under which people lead their lives and include the health policy environment, community capacity and engagement, social norms, social deprivation, discrimination, and physical environmental influences. For example, community capacity which refers to characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems can moderate the effect of health care system factors on the desired health behavior.

It is useful to categorize model constructs as either mutable or immutable. Mutable factors are particularly important as they represent potential targets for intervention. For example, individual-level interventions may attempt to promote health behaviors by increasing knowledge or reducing barriers. Mutable provider-level factors such as practice norms or structural barriers are another common intervention target. Although factors at the macro-level such as the health policies and community characteristics are theoretically mutable, they are unlikely targets for community-based trials in which they generally function as immutable. However, immutable factors at all levels are important, should be conceptualized, and when possible assessed. At the individual-level, immutable factors such as demographics can be used to target or tailor intervention content (e.g., crafting messages specific for certain ethnic or age groups). Immutable factors may also serve to moderate the effect of the intervention (e.g., the intervention is more effective among inner city versus suburban residents).

The framework depicted in Fig. 1 is a generic representation of the relationships among the various constructs. The model recognizes that various mediating and moderating relationships and multiple pathways will lead to the health behavior in question. The HBF is dynamic rather than static in that the constellation of predictive factors and their interrelationships is expected to vary depending upon the particular subject populations and health behaviors in question. Despite some differences, our extensive experience with the HBF (Bastani et al., 1999; 2001; 2007; Glenn et al., 2006; Maxwell et al., 1998a, 1998b; Taylor et al., 2004) and utilization of its constructs in other cancer screening research (Schueler et al., 2008; Beydoun and Beydoun 2008; Zapka 2008; Zapka and Lemon 2004) has shown that the major drivers of behavior tend to be similar across populations. For example, "barriers" are one of the strongest predictors of a wide variety of health behaviors in different populations, although the specific barriers in question may vary (Beydoun and Beydoun, 2008; Janz and Becker, 1984). Although some may consider it a limitation, the model by intent is broad to permit its use in studies targeting a wide variety of populations and health behaviors thus allowing for important comparisons regarding the various model predictors and their relationships with behavioral outcomes.

Description of the program project

Liver cancer disproportionately affects Asian Americans in the United States, reflected in incidence and mortality rates that are eight times higher than those among non-Hispanic Whites (McCracken et al., 2007). Among Asians, over 80% of liver cancer is etiologically related to chronic hepatitis B viral infection, which is endemic in Asia (Beasley, 1988; Blumberg & London, 1982; Chen et al., 1997) and therefore also very highly prevalent among Asian immigrants to the United States (Tong and Hwang, 1994). Although universal vaccination of newborns is a promising strategy for future eradication of