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An Examination of Theories of Health Behaviors for Guiding Research on Mammogram Screening Practices for Korean Immigrant Women

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Ⅰ. Introduction

Mammogram screening rates in the general population in the U.S. have greatly increased since the 1980s, because the importance of breast cancer early detection and mammography has been stressed in medicine and public health. Recent cancer statistics show that mammogram screening rates increased from 25% to 67% in the period of 1987 - 1998 (National Center for Health Statistics, 2000). However, universal access to mammogram screening may not translate into its optimal utilization among marginalized population groups. Significant ethnic disparities in mammogram screening rates have been reported showing that women in minority populations have far lower screening rates than those of the national guidelines as well as those of women in general (National Center for Health Statistics, 2000).

In Korean immigrant women in the U.S., who are the one of the fastest growing Asian populations, mammogram screening rates are reported between 24-25% (Maxwell, Bastani, & Warda, 1998). Immediate attention and investigation in order to diminish disparities in screening rates are needed to this population. Although studies on mammogram screening among Korean immigrant women are very limited in number, several investigations illustrated that mammogram screening behaviors in this population are complicated and multifaceted with dimensions including cognitive, affective, cultural, socioeconomic, and environmental factors.

First, in the cognitive domain, low levels of knowledge and awareness about breast cancer early detection and screening techniques are very prominent in Korean immigrant women (Han, Williams, & Harrison, 1999). Almost half of Korean immigrant women who participated in Han et al.'s study (1999) reported that they did not have adequate knowledge of nor skills to perform breast cancer screening techniques.

Second, several affective and cultural factors prevalent in Asian culture have been were

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reported as impediments to mammogram screening, including low perceived susceptibility to breast cancer, cultural modesty, and embarrassment to name a few (Facione, Giancarlo, & Chan, 2000). Lastly, environmental and socioeconomic factors such as cost, time, transportation, insurance, and access to health care are reported as significant factors that affect Korean immigrant women's mammogram screenings (Maxwell et al., 1998).

Because of the many factors underlying screening behaviors, numerous theories of health behaviors or behavior changes have been employed to better understand and explain their influence on breast cancer screening behaviors, including mammogram screening. Based on these theories, researchers have described barriers and facilitators related to mammogram screening. In order to select an appropriate behavioral theory for guiding research on mammogram screening behaviors among Korean immigrant women in the U.S. as well as women in Korea, it is imperative to identify the advantages and disadvantages of behavioral theories that have been commonly used in research on mammogram screening behaviors.

In this article, five of the major theories of behavior and behavior changes - the Health Belief Model (HBM), the Social Cognitive Theory (SCT), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviors (TPB), and the Transtheoretical Model will be addressed and analyzed under the context of breast cancer screening. Literature is derived from four different online databases: CINAHL (from 1982 to 2002), MEDLINE (from 1966 to 2002), PsycINFO (1887 to 2002), and Sociological Abstracts (from 1963 to 2002). All articles focusing on any psychosocial factors or determinants associated with mammogram screenings written in English are included. Among over the hundred articles evaluated for the analysis, only partial references are cited in this article due to the limited number of references for publication.

In the remaining sections, the author describes general concepts of theories of health behavior and behavior change, and then discusses the aforementioned five theories in terms of their premises, main variables, and advantages and disadvantages in research on mammogram screening behavior in Korean immigrant women. By comparing these behavioral theories with one another, the author intends to identify the sociocultural relevance of the behavioral theories for research on Korean immigrant women.

Ⅱ. Theories of Health Behavior and Behavior Change

Many theories have been proposed over the years to explain an individual's health behavior. Health behavior in this article refers to those personal, cognitive, affective, and behavioral attributes, including actions and habits that relate to health maintenance, health restoration, and health improvement (Gochman, 1997). These theories of health behavior are based on a reciprocal interaction world-view in which an individual is viewed as an integrated and organized entity, and his or her behaviors are the manifestations of dynamic causal processes (Bandura, 1986).

Theories of health behavior are based on the assumption that behavior occurs according to human psychological functioning, which involves a reciprocal interaction between the behavior and its controlling environment. In other words, patterns of health behaviors are closely linked to numerous sociocultural, psychological, and environmental conditions. Therefore, health behaviors should be understood by the context in which people live (Gochman, 1997). In order to explain health behaviors and associated

factors, as well as to predict and change undesirable health behaviors, theories of health behavior have been used to guide health behavior research, which is defined in this paper as an "emerging interdisciplinary, systematic examination of those health behaviors and their determinants" (Gochman, 1997).

Ⅲ. Analysis of Existing Health Behavior Theories

In this section, the most common theories of behavior or behavior changes, i.e., the HBM, SCT, TRA, TPB, and the Transtheoretical Model, are described in terms of their sociocultural relevance for Korean immigrant women related to breast cancer screening practices. The rationale for choosing these five theories was based on their utilization in research and practice (Gorin, 1998). Sociocultural relevance of the theories of health behavior in minority populations has been examined for African-American women (Ashing-Giwa, 1999). African American specific sociocultural dimensions, such as interconnectedness, health socialization, ecological factors, and heath care system factors have been integrated into intervention models to improve breast cancer screening with African American women (Ashing-Giwa, 1999). For Korean immigrant women, such an analysis with African American women suggests the need for an innovative theoretical framework, which would eventually lead to improved breast screening practices.

1. Health Belief Model

1) Background

In the early 1970s, the Medical Sociology Section of the American Sociological Association undertook a systemic analysis of research findings regarding health behavior, with the goal of expanding on the best model or models available for predicting preventive health behaviors, medical treatment utilization, delay in seeking care, and adherence to treatment regimens (Becker, 1974). The health belief model (HBM), which was formulated by Hochbaum, Leventhal, Kegeles, and Rosenstock in the 1950s, was suggested as the most comprehensive and profound model in comparison to the relevant theories in social psychology at that time.

The HBM is derived from the social psychological theory of Lewin, which is called "the force field concept," explaining that behavior is the result of two sets of forces, which are the change or driving forces and the resisting or restraining forces (Lewin, 1935). According to Lewin, these two sets of forces are constantly working against each other and determine an individual's specific behavior. In addition, the role of subjective values and expectations held by an individual play an important role (Lewin, 1935). With its focus on disease prevention in public health since the 1950s and the 1960s, the HBM has been one of the most frequently used and prevalent psychosocial theories of health behavior in research.

2) Main Variables

Based on Lewin's force field concepts, the HBM initially proposed that individual perceptions of the threat of a disease, perceived feasibility of preventive action, and various internal and external cues to action determined the likelihood of the behavior (Becker, 1974). The Health Belief Model originally proposed the following theoretical conditions and components: (1) the individual's psychological readiness to take action related to a particular health condition is determined by both the perceived susceptibility or vulnerability to the

particular condition, and by perceptions of the severity of the consequences of contracting the condition; and (2) the individual's evaluation of the desired health behavior in terms of its feasibility and efficacy is influenced by potential benefits and barriers in order to initiate the behavior (Becker, 1974). Later, the concepts of self-control and health motivation were added to the HBM in order to increase its explanatory power (Rosenstock, Strecher, & Becker, 1988).

3) Use

The Health Belief Model has been used for years as the conceptual framework in many different areas and populations in disciplines such as nursing, public health, psychology, and medical sociology. Because the HBM has been used extensively in studies of breast cancer screening behaviors, additional analysis is warranted. In this section, the utilization of HBM in relation only to mammogram screening is described..

A total of twenty-nine studies used the HBM as a guiding conceptual framework for explaining or predicting factors associated with

<Table 1> Health belief model variables and mammogram screening health behavior

Articles \ HBM Variables	Susc	Sevt	Benf	Barr	SE	Mot	Cues	Knwl
Aiken, West, Wookward, & Reno (1994)	∨	O	∨	∨			∨	
Bastani et al. (1994)	O		∨	∨			O	∨
Black, Stein, & Loveland-Cherry (2001)	O		∨	∨				
Champion (1991)	∨	O	O	O	O	O	∨	∨
Champion (1992)	∨	∨	∨	O	∨	∨	∨	∨
Champion (1994a)	O	∨	∨	∨	∨	∨		
Champion (1994b)	∨	∨	∨	∨			∨	∨
Champion (1995)			∨	∨				
Champion & Scott (1997)	O		∨	∨			∨	∨
Champion & Springston (1999)	∨		∨	∨				
Champion & Miller (1996)	∨	O	∨	∨	O	O	∨	∨
Champion et al. (2000)	∨		∨	∨				∨
Fiechera & Frank (1994)	O	O	O	∨		O		
Fowler (1998)			O	∨				
Fuller, McDermott, Roetzheim, & Marty (1992)	∨	∨	O	∨				
Hall & Hooper (1999)	O	O	∨	O		O	∨	
Han et al. (2000)	O	O	∨	∨				∨
Holm, Frank, & Curtin (1999)	O	O	∨	∨	O	∨		
Hyman, Baker, Ephraim, Hoadel, & Philip (1994)	O		∨	∨				
Johnson & Meischke (1994)	O	∨			O	O	∨	
Lagerlund, Hedin, Sparen, Thurfjell, & Lambe (2000)	O		∨	∨	O		∨	∨
McDonald et al. (1999)	O	O	O	O				∨
Petro- Nustas (2001)			∨	∨	∨		∨	∨
Price et al. (1992)	O	∨	∨	O			∨	O
Reynolds, West, & Aiken (1990)	O	O	∨	O			O	
Rutledge, Barsevick, Knobf, & Bookbinder (2001)			O	O			∨	
Savage & Clarke (1996)	∨			O	O		∨	
Thomas, Fox, Leake, & Roetzheim (1996)	∨		∨	∨				O
Yi (1994)	O	O	∨	∨				
Studies have significant correlation between HBM var and mammogram practices (n) / total studies (n) (%)	10/25 (40%)	6/16 (38%)	21/27 (77%)	20/28 (71%)	3/9 (33%)	3/8 (38%)	13/15 (86%)	11/13 (85%)

∨ = Significant correlation, O = Non-significant correlation, ⊘ = Not measured
Susc = perceived susceptibility, Sevt = perceived severity, Benf = benefits, Barr = barriers
SE = self-efficacy, Motiv = health motivation, Cues = cues to action, Knwl = knowledge

mammogram screening <Table 1>. The bibliography of HBM studies are omitted in this article due to the limited number of references for the publication. Of those articles, 25 studies (86%) were cross-sectional surveys investigating correlations among mammogram adherence according to the American Cancer Society guideline and the HBM variables as well as other external variables. The remaining four studies (14%) were experimental studies whose interventions were developed based on the HBM to improve mammogram practices in diverse populations. The samples in more than half of these studies were biased toward Caucasians studies for other populations remain for future research.

The studies that investigated the relationships between mammogram practices and the HBM variables have yielded inconsistent results. Perceived barriers followed by perceived benefits appear to be the most supportive of the HBM in explaining mammogram screening. Given the fact that barriers to mammogram may rely upon the characteristics of the population under investigation, the explanatory power of the HBM variables is questionable for describing or predicting mammogram practices in general. However, accumulated psycho-behavioral studies have affirmed that the HBM has strength in explaining the impact of psychological vulnerability in life-threatening conditions such as breast cancer.

2. Social Cognitive Theory

1) Background

Bandura proposed the social cognitive theory (SCT), which was formerly called Social Learning Theory, as an explanatory model of health behavior and a guide for developing effective health promotion interventions (Bandura, 1977). Since then, the SCT has been tested for its adequacy and applicability in various areas of research and has been extended to broader theoretical perspectives in Bandura's consequent works (Bandura, 1986). Self-efficacy, the underlying causal mechanism in the SCT, has also assumed an important role in health promotion practice and research, and has been incorporated into other theories such as the Health Belief Model (Rosenstock et al., 1988) and the Theory of Planned Behavior (Ajzen, 1988).

2) Main Variables

In the SCT, two main factors, individual beliefs of self-efficacy and outcome expectancy by performing the behavior, determine the initiation and maintenance of health behaviors (Bandura, 1977). Self-efficacy is defined as an individual's belief in his or her capabilities to achieve different levels of performance attainment. The stronger the sense of self-efficacy an individual has, the more successful he or she is in initiating and maintaining a recommended health behavior (Bandura, 1977). Outcome expectancy is a person's belief about the outcomes that result from a given behavior. These outcomes can take the form of physical, social, or self-evaluative effects. Positive outcomes must outweigh the expected negative outcomes or consequences to initiate the behavior (Bandura, 1986).

3) Use

There is a considerable amount of evidence in pertinent literature demonstrating the value of self-efficacy in predicting, enhancing, and maintaining health behavior change in diverse areas. The SCT has been frequently utilized as a theoretical framework in areas as diverse as smoking cessation, weight control and eating disorders, exercise, alcohol abuse, and contraceptive behavior (Anderson, Winett, & Wojcik, 2000; Pinto, Lynn, Marcus, DePue, & Goldstein, 2001).

Researchers have employed the SCT as a

part of a combined theoretical framework for guiding research on psychosocial factors related to breast cancer screening practices. Cross-sectional studies were found to employ the SCT in combination with the HBM (Kurtz, Given, Given, & Kurtz, 1993; McBride, Curry, Taplin, Anderman, & Grothaus, 1993). These studies examined breast cancer screening either in worksite populations or women with a Health Maintenance Organization (HMO) service. Only one study by Kurtz et al. (1993) had a significant relationship between self-efficacy and mammogram screening practices.

3. Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB)

1) Background

Fishbein and Ajzen developed the theory of reasoned action (TRA) in 1975, suggesting that an individual's "intention" to perform or not perform the given health behavior is the best direct determinant of the actual performance of the behavior (Fishbein & Ajzen, 1975). Consequently, intentions are a function of a person's attitude toward the behavior and the person's perceptions of social norms regarding the behavior. After the construct of self-efficacy was proposed (Bandura, 1977), Ajzen (1988) incorporated the self-efficacy belief into the model and established the theory of planned behavior (TPB).

2) Main Variables

According to the TRA, performance or nonperformance of a given behavior is primarily a function of the person's intention to perform or not perform the given behavior. The intention has two main determinants, the individual's attitude toward performing the behavior and perception of social pressure (subjective norms), which is exerted on the individual to perform the behavior (Fishbein & Ajzen, 1975).

In the TPB (Ajzen, 1988), perceived behavioral control (self-efficacy) was added as a third determinant of intention, which refers to people's perception of the ease or difficulty of performing the behavior of interest. Other variables except perceived behavioral control are identical with the TRA. The notion of perceived behavioral control is comparable to that of self-efficacy in social cognitive theory (Bandura, 1977) and the health belief model (Rosenstock et al., 1988), which is explained as the individual's perceived capability to perform a behavior.

3) Use

The TRA and TPB have been utilized in numerous prevention-related health behaviors such as obtaining Pap smears, improving condom use, and reducing alcohol consumption (Jennings-Dozier, 1999; Marcoux & Shope, 1997). Several groups of investigators used the TRA to study mammogram screening practices and related factors in cross-sectional studies (Montano & Taplin, 1991; Montano, Thompson, Taylor, & Mahloch, 1997). The findings from all three studies supported that subjects' intentions to obtain a mammogram had a positive relationship with their attitudes and subjective norms toward mammogram screening. The expanded TRA, to which two additional variables, affect and facilitating conditions were added; explained 39% and 54% of the variance respectively in women's intentions and 20% and 34% of the variance in mammogram participation respectively (Montano & Taplin, 1991; Montano et al., 1997). In addition, the TRA was used in combination with the Health Belief Model in several studies (Aiken, West, Woodward, Reno, & Reynolds, 1994; Bastani, Marcus, Maxwell, Das, & Yan, 1994).

The efficacy of TPB was evaluated examining

the relationship between the TPB variables and BSE and mammogram practices (Campbell, 1995; Godin et al., 2001). Findings from the studies supported that the TPB variables explain some variance in women's BSE and mammogram practices. All of these studies used the TRA and TPB to demonstrate that affirmative explanatory power of the intention construct, which is the best direct predictor of the given behavior. However, only one study by Campbell (1995) tested the TPB in a minority population, young Latino women, demonstrating a lack of research on diverse populations. In addition, the TPB variables partially explained the Latino participants' BSE practices indicating the cultural limitation of the theory.

4. Transtheoretical Model (TTM)

1) Background

In contrast to the other theories in which the given behavior is scrutinized in relation to psychosocial factors, the Transtheoretical Model (TTM) provides a different perspective on health behavior change, by focusing on the individual's readiness to take action (Prochaska, DiClemente, & Norcross, 1992). The TTM identifies five different stages in health behavior change. Although the TTM was originally developed for smoking cessation (Prochaska et al., 1992), it has become one of the most widely used theories in health behavior change, especially for designing interventions in health promotion (Anspaugh, Dignan, & Anspaugh, 2000).

2) Main Variables

According to the TTM, changes in health behavior progress through these five stages: pre-contemplation, contemplation, preparation, action, and maintenance (Anspaugh et al., 2000). In the first stage, people have no intention of taking any kind of action concerning their current behaviors or habits. The second stage, contemplation, identifies a state in which people begin to think about changing their behaviors or adapting a new behavior at sometime point in the future, and weighing benefits and barriers that may occur with changing their behavior. If they perceive that the barriers outweigh the benefits, they may not progress to any further subsequent stages. When people decide to initiate the behavior, they actually begin to modify their actions or environment to overcome the identified barriers (preparation state). In the action stage, people begin the actual practice of the desired behavior. During maintenance, the desired behavior is continued for a given time period (Anspaugh et al., 2000). An additional concept, decisional balance, was proposed later to explain how people move forward through the states as the "pros" related to undertaking the given behavior begin to outweigh the "cons" (Prochaska et al., 1992).

3) Use

Several studies were found, which used the TTM as a research framework to investigate women in different stages of mammogram screening adoption. Findings from the cross-sectional studies supported the fact that women in pre-contemplation and contemplation stages had more barriers than women in action or maintenance stages. Also, women in the action and maintenance stages had a positive decisional balance and identified that their perceived benefits outweighed the barriers (Mickey, Durski, Worden, & Danigelis, 1995). Moreover, the stages of TTM appear very useful for framing interventions to improve mammogram-screening practices in Caucasian women (Champion, Skinner, & Foster, 2000) as well as in minority (African Americans and Hispanics) and rural women (Earp et al.,

1995). However, no research has been reported using the TTM on mammogram adaptation in Korean immigrant women either in the U.S. or in Korea.

The major strength of the Transtheoretical Model (TTM) is that it helps to identify an individual's stage of mammography adaptation, so that researchers may develop a specified intervention for enhancing a woman's adherence to mammogram screening. In addition, relevant research shows that the TTM is a systematic integration of the various psychosocial factors. However, a weakness of the TTM is the fact that it cannot explain in-depth psychosocial and cultural barriers, which may vary in different populations or under diverse contexts. Thus, use of the TTM in Korean women would be advantageous to identify stages but not sufficient to reveal underlying cultural barriers.

Ⅳ. Sociocultural Relevance for Korean Immigrant Women

Consideration of the social and cultural relevance of the aforementioned theories for Korean immigrant women begins by an examination of the origins of these theories. For the most part, these theories are abstracted and developed within mainstream American public health and sociology and by western researchers. The HBM, for example, was developed based on pertinent reviews of public health and socio-medical research on middle class Caucasian populations (Becker, 1974). Thus, the theories assume that an individual makes his or her decisions regarding health behaviors independently and in accordance with a westernized logical process. This is not necessarily legitimated in groups of people from different historical, cultural, religious, and philosophical backgrounds, including Koreans.

The other concern is located in the underlying assumption about the unit of analysis for all of these theories. A major assumption of the theories is that a person operates volitional thought processes at the individual level, with influence from others taken into account, such as cues for action in HBM, and subjective norm in TRA and TPB. However, in a culture where an individual is identified only as a part of the group and all members of the group influence each other on decision-making related to health and illnesses, as in the Korean culture, this assumption is not valid. Moreover, the concept of self varies widely among cultures, with many different definitions and interpretations of self-efficacy. If it exists at all, self-efficacy in collectivistic cultures may be quite distinct from that of individualistic cultures.

Along with the collective aspects of Korean culture, the last limitation of the theories concerns their explanatory scope. The major health behavior theories view a single health behavior as manipulatable and controllable at the individual level. If benefits (HBM) or outcomes (SCT) of the health behavior outweigh barriers or negative outcomes (TRA), the individual is expected to perform the given behavior. This concept of individual volition or control may be applicable to middle class American people, who are less restricted by social and societal inequality. Among persons from ethnic minorities, lower socioeconomic conditions, or culturally or religiously marginalized groups, control of health promoting behavior is less likely at an individual level. Systems or social constructs often considerably pre-form an individual's perception of health and health related behaviors (Nettleton, 1995). Considering these social, cultural, and societal circumstances, Korean women both in the U.S. and Korea experience broad and complex influences related to adherence to breast cancer screening.

Ⅴ. Conclusion

In this paper, the sociocultural relevance of the five major theories of health behaviors was described within the context of breast cancer screening among Korean immigrant women. The Health Belief Model, the Social Cognitive Theory, the Theory of Reasoned Action, the Theory of Planned Behaviors, and the Transtheoretical Model were analyzed. Each theory was discussed in terms of its background, major variables, and utilization in research on breast cancer screening practice. Although every theory has different set of strengths in describing certain health behavior, it lacks in explaining sociocultural aspects of non-white populations related to western breast cancer screening practice. It can be argued that this limitation is the reason why the interventions derived from these theories to improve the screening practices among minority populations have not been quite successful. In summary, historical, sociocultural, and societal relevance of the existing theories of health behaviors forces to deconstruct the theories with regard to their applicability for non-white populations including Korean women living in both Korea and U.S. An innovative theoretical framework is needed for a much deeper understanding of these women, who are gendered and socially positioned as Korean women.

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- 국문초록 -

건강행위이론의 사회문화적 적합성에 대한 논의: 한인여성의 유방암 방사선 검사 행위와 관련하여

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연구 목적: 1980년대 이후 미국 여성들의 유방암 조기 진단을 위한 방사선 검진율은 급속히 증가하였음에도 불구하고 유색 인종의 여성들은 여전히 조기 검진의 혜택을 받지 못하고 있다. 유색인종 여성들의 낮은 검진율을 설명하기 위해 여러 건강행위이론을 이용한 관련 요인들이 연구되어 왔다. 이 논문은 미국 보건 의료관련 연구에서 가장 많이 쓰이는 다섯 건강행위 이론을 유색 인종 여성, 특히 한국 이민 여성들의 유방암 조기검진 이행에 적용하기 위해 사회문화적 적합성을 평가하기 위해 고안되었다. **연구 방법:** 네 종류의 데이터베이스(CINAHL, MEDLINE, PsycINFO, Sociological Abstracts)를 이용한 심층적 문헌 고찰을 통해 각각의 이론으로 유방암 조기 검진을 설명한 연구들을 모두 분석하였다. **연구 결과:** 각 이론들의 배경, 주요 요인, 그리고 유색인종의 유방암 조기 검진에서의 적용 연구 등을 분석하였다. **결론:** 서양 문화권 속에서 개발된 각 이론들이 한국적 정서와 행동을 설명하는데 명확한 한계가 있으며 이러한 한계를 극복하기 위해서는 기존의 이론들을 면밀하게 재분석하여 한국적 특성을 담아낼 수 있는 새로운 이론의 도출이 요구된다.

주요용어 : 유방암, 유방 방사선 촬영, 건강행위, 한국인

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