

An e-Health Belief Model for Internet Weight Control Information Seeking and Acceptance Behavior

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ABSTRACT

The purposes of the paper is to develop and to test an e-Health Belief Model (e-HBM) to explain the intention and behavior of Internet health information seeking and acceptance for weight control. 205 valid questionnaires were obtained that yielded the 82.7% valid respond rate. Nineteen classes among ten universities and colleges students in Taiwan including undergraduate students and on-the-job students responded the survey. SmartPLS was used to analysis the measurement and path in this model. The result of measurement model analysis confirmed the reliability and validity of the instrument. Result and implication are discussed.

Keywords: Health Belief Model, Internet Health Information, Weight Control

INTRODUCTION

The purpose of this study is to establish an e-Health Belief Model and examine people's willingness and behavior to control weight using the health information available on the Internet. According to previous studies related to the Health Belief Model, the variables in this study include perceived susceptibility, perceived severity, perceived benefits in action, perceived barriers in action, cue to action, and willingness and behavior to use the information. From a practical perspective, the e-Health Belief Model and its associated variables can be used to explain or predict the intentions or beliefs of Internet users for accepting health recommendations from the Internet and adopting proper behaviors to control weight. Therefore, the study results could serve as a reference for health educators developing weight control programs on the Internet, or for planners of health information websites.

MATERIAL AND METHOD

The questionnaire was developed by drafting the initial scale, meeting with experts, and a pre-test. The dimension of the questionnaire of Health Belief Model included perceived susceptibility, perceived severity, perceived benefits in action, perceived barriers in action, and cue to action. Questionnaire items were adapted from previous studies such as [1-3]. We adapted the items of [4]. we used three questions to ask about one's preferences, attitudes, and behavioral intentions toward using the health information on the Internet. These questions were (1) Whenever I have a question or confusion regarding weight control (e.g., diet, exercise, or taking medicine), I seek information on the Internet; (2) I think the health information on the Internet is reliable; (3) I think I could appropriately refer to the health information on the Internet. We adapted the self-report scale of the information using behavior scale in Wilson's[5] study. Wilson categorized this behavior of information usage into four categories: (1) Passive Attention—one obtains information accidentally without an intention. That is, accidentally browsing related information on the Internet. (2) Passive Search—one finds information accidentally when searching. (3) Active Search—one looks for information intentionally. (4) Ongoing Search—one looks for information continuously and intentionally. Then, we sharpened up these ideas into three questions to assess responders' use of Internet health information about weight control in the past month: (1) I browse health-related information when surfing the Internet; (2) I actively search for suitable health-related information on the Internet when I have a question; (3) I improve my health status by

referring to suitable health information. These questions were based on a 5-point Likert scale, where 5 indicated most of the time and 1 indicated none of the time.

Data was collected through on-site self-administered questionnaires. We recruited college students for this study because, based on previous investigations of Internet users, most of them were of the younger generation, and compared to other populations, college students have more chances to use the Internet. We could not obtain a list of our study population, and thus we adopted the convenience sampling method. We picked 19 colleges in northern, middle, and southern Taiwan. The sample inclusion criterion was anyone who had experience in surfing websites regarding weight control in the past month or had controlled their weight in the past year. To increase people's willingness to participate in the study, we provided a gift for each respondent.

RESULT

A total of 248 questionnaires were returned. After excluding those with incomplete answers, 205 questionnaires were valid, yielding an 82.7% valid response rate. With respect to the demographics of the study sample, most of the participants were aged between 21-25 years (24.9%), followed by the 26-30 years age group (20.5%) and <20 years age group (18%). There were more women than men, suggesting that the young woman generation account for a greater proportion of people surfing websites with health information. Most of the participants (81%) had experience in using the Internet for more than 5 years.

Regarding the perceived weight and body figure of these participants, 34.6% of the participants regarded themselves as "overweight," 34.1% reported "a little heavy," and 27.3% reported "moderate," As for body figure, 41.5% of the participants regarded their body figure as "moderate," 32.7% were "dissatisfied," and 18.5% were very "dissatisfied."

Regarding past weight control experience, only 30.2% of the participants used a single approach to controlling weight, and the others had used a combination of two or more approaches. Among these approaches, diet control was the most popular method (69.8%), followed by exercise (62.0%) and using slim-up tea (23.9%). Only 28.3% of the participants had a successful experience in their prior weight control, while most of them (51.7%) regained weight after a weight loss, and 20% of them failed. Regarding the probability of attempting to control their weight in the next year, only 1 (0.5%) of them answered "definitely impossible," and 6.3% answered "impossible." The proportions of "probable" and "highly probable" answer were 58% and 35.1%, respectively.

We used the partial least squares (PLS) method to do an examination and a path analysis using the SmartPLS program (Ver 2.0 M3) [6]. Composite Reliability (CR) and Average Variance Extracted (AVE) of each research dimension, as well as the correlation coefficients were examined to ensure reliability and validity of the study[7-8]. We examined the correlation between the research dimensions through path analysis using Smart PLS. There are no indicators like GFI or AGFI in PLS to represent the overall goodness of fit index of a model. Only the R square of the internal dimensions and the path coefficients and their statistical significance values were calculated.

The result reveals that one's willingness to use the health information on the Internet had a positive impact on real practice ($\beta = 0.556$, $p < 0.001$), and the explained variation was 31%; (2) Willingness to use was significantly impacted by one's perceived severity of the adverse outcomes of obesity (perceived severity) ($\beta = 0.562$, $p < 0.001$), the benefits of using health information on the Internet (perceived benefits in action) ($\beta = 0.156$, $p < 0.05$), and the limitations of using health information on the

Internet (perceived barriers in action) ($\beta = 0.180$, $p < 0.05$). The combined explained variation was 52.1%. However, willingness to use was not impacted by perceived susceptibility ($\beta = 0.054$, $p > 0.05$). In addition, perceived severity had the greatest impact, much greater than the impact of the other two variables (perceived barriers and perceived benefits in action); (3) Cue to action (usually pay heed to the weight control information on the mass media) had a significant impact on perceived severity ($\beta = 0.643$, $p < 0.001$), perceived benefits in action ($\beta = 0.213$, $p < 0.05$), and perceived barriers in action ($\beta = 0.262$, $p < 0.05$), and the explained variation was 41.3%, 41.3%, 6.9%, respectively. However, cue to action did not impact the perceived susceptibility ($\beta = 0.014$, $p > 0.05$). In addition, the impact of perceived barriers in action on perceived benefits in action was significant. ($\beta = 0.553$, $p < 0.001$, explained variation=41.3%).

DISCUSSION

(1) When undergoing weight control, one's willingness to use the health information on the Internet has a positive impact on real practice

This finding was consistent with those in study by [4], that willingness to use had a significant impact on real practice. However, as the explained variation was only 31%, there may still be some other variables in addition to willingness to use that could impact one's real practice.

(2) The Health Belief Model was capable of explaining the willingness to use and using behavior of the on-line health information when one is undergoing weight control

There were three Meta Analysis articles regarding the Health Belief Model in local and abroad[1-3,9]. In this study, the explained variation of willingness to use based on the Health Belief Model was 52.1%, which was much higher than the 27.353% calculated in a review article by [9], who reviewed all the studies of Health Belief Model in Taiwan from 1974 to 2003. However, we could not compare this result with the other two articles as there were no summarized values of this explained variation. Nevertheless, when studying the R-square value was still higher than [3]'s citation.

(3) The level of impact of four variables of Health Belief on willingness could be listed in a descending manner as perceived severity, perceived barriers in action, and perceived benefits in action, while the impact of perceived susceptibility was not significant

Among the four Health Belief variables, perceived severity had the greatest impact on willingness to use the health information on-line when undergoing weight control, followed by perceived barriers and perceived benefits in action. However, the impact of perceived susceptibility was not significant. This finding was inconsistent with previous ones, indicating that the explanation capability of the belief variables on motivation of health behavior varies in different research conditions.

Janz and Becker [1] found that, regarding preventive health behavior, perceived barriers in action was the most significant predictor, followed by perceived susceptibility and perceived benefits in action, and the least impacting factor was perceived severity. Only half of the existing studies discovered a significant impact of perceived severity. Harrison, Mullen,& Green [3] reviewed articles regarding health behaviors of adults, and discovered that the level of impact of the variables on health behavior was strongest in perceived barriers in action, followed by perceived susceptibility, perceived benefits in action, and perceived severity. Kuan [9] reviewed articles related to the Health Belief Model conducted

in Taiwan between 1974 and 2003, and discovered that for willingness of preventive health behavior, perceived barriers in action was the most influential explanation or prediction variable, followed by perceived benefits in action, perceived severity, and perceived susceptibility. In light of the review articles above, concerning preventive health behavior, perceived barriers in action was usually the most influential variable while perceived severity the least one.

The inconsistency between the current findings and previous results could be attributable to the different study behavior and sample used in this study. We studied the information seeking behavior related to weight control. Weight control is a kind of preventive health behavior, which includes the screening behavior and behaviors regarding health promotion, health maintaining, and disease prevention adopted among common healthy individuals, for instance, keeping regular exercise, controlling diet, or quitting smoking [1], etc. Information seeking behavior is an information searching and understanding behavior aimed to solve a problem [5]. We studied the “information searching and understanding behavior aimed to solve the problems of weight control.” This behavior is associated with health promotion, health maintaining, or disease prevention and hence the behavior studied here belonged to preventive health behavior.

However, to compare the difference, behaviors like regular exercise, diet control, or smoke cessation require greater mental effort for the general population, especially for those without an established habit (e.g., one that seldom does exercise, one that sometimes overeats, and heavy smokers). Information seeking behavior is a basic ability to current young generation. They had learned using a computer since elementary education, and therefore solving problems by seeking information from the Internet became common among people aged around 20-30 years. As 81% of the study participants had experiences of using the Internet for more than 5 years, the perceived barriers in action like time, equipment, or ability did not lead to their motivation toward on-line health information searching. Instead, the risk as a result of weight control problems was the major trigger of motivation.

Risk factors include perceived susceptibility (probability of being overweight) and perceived severity (the adverse outcome of being overweight). Even though most of the studies found that individuals who perceived themselves as overweight tended to perform weight control, in Anderson et al.'s study[10], a small number of such people did not try to control their weight, and the main reason was unconcern for the consequences. People under 40 years accounted for the most part of the study sample. They could not have enough understanding of the consequences of obesity, like diabetes, hypertension, and cardiovascular diseases, etc. On the other hand, they cared more about the obesity-related problems on appearance, clothing, relations with others, or working image. Weinstein and Rothman [11] found that pursuing health was not the only purpose of weight control. Some people controlled diet to keep their figure or exercised to receive applause from the others. Therefore, regardless of whether people perceived themselves as being overweight or are dissatisfied with their body figures or not, they still performed weight control through every means to avoid the consequences of obesity, including seeking information helpful for weight control on-line. According to this study, all except for 2 of the participants had at least adopted more than one method to lose weight, and even 69.7% of them had tried two or more methods. 93.1% of the participants suggested that they would do weight control in the next year. These demonstrate that weight control has been widely accepted among the young generation.

(4) Among the four Health Belief variables, the level of impact of cue to action was greatest on perceived severity, followed by perceived barriers in action and perceived benefits in action, while the impact on perceived susceptibility was not significant

In the past, studies of HBM merely examined the impact of cue to action on perceived

susceptibility and perceived severity [1,3]. Cue to action represents some cues that trigger health behaviors. These cues can be separated into inner cues (e.g., illness and symptoms) and outer cues (e.g., physicians' recommendations, support from relatives, or education from mass media). The stimulation created by the mass media (e.g., television, broadcast, and the Internet) is the only concern in this study. Since perceived susceptibility was measured according to responders' subjective perceptions of weight and body figure rather than an objective BMI, in the era where being slim is beautiful, some people still think of themselves as being overweight even if their BMI is standard. In addition, as the subjective perception of weight and body figure could further be impacted by the evaluation of friends or relatives, it is reasonable that cue to action had no significant impact on perceived susceptibility. People who usually paid attention to the information regarding weight control in the mass media were more likely to understand the adverse outcomes of weight control problem. Thus, the impact of cue to action on perceived severity was significant.

Perceived benefits in action is the subjective evaluation of the effectiveness of the adopted behaviors in lowering the disease susceptibility or severity. Perceived barriers in action is the subjective evaluation of the potential barrier of adopting a behavior [2]. These are similar to the perceived technology usefulness and easiness defined in the Technology Acceptance Model (TAM). Many researchers studying the TAM-related theories have tried to understand the impact of outer variables on perception variables. Consistent with this study, Legris et al. [12] suggested in their literature review that information stimulation or education has a positive impact on perceived technology usefulness and easiness.

(5) Decreasing the obstacles of the perceived barriers was helpful for increasing the perceived benefits

In most of the TAM studies, researchers found that perceived technology usefulness increased in accordance with an increase in perceived technology easiness. We added this path into the study model and found a significant impact, which was consistent with previous TAM studies.

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