Influence of Attitude, Subjective Norms, Perceived Behavioral Control on Intention to Perform Cardiovascular Disease Preventive Behaviors among Young Adults in Bangladesh

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Abstract

Intention to perform Cardiovascular Disease (CVD) preventive behaviors has associated with some predictive factors, but remained less attention to investigate in young adults population. The aim of this study was to examine the level of intention to perform CVD preventive behaviors and its predictors and to determine the predictive ability of those predictors. The samples comprises of 119 young adults in Bangladesh. Self-administered questionnaires were used to collect data which includes demographic and CVD preventive behaviors information, intention to perform CVD preventive behaviors and its predictors. The data were analyzed by both descriptive and inferential statistics. Consistent with the theory of planned behavior, hierarchical multiple regression analysis revealed that attitude, subjective norms and perceived behavioral control together accounted for 22% of variance for intention. Both the attitude and subjective norms jointly predicted 19% variance of adolescent intention to perform CVD preventive behaviors (Adj. $R^2 = .18$, $F=13.66$, df 2, 116, $p<.01$). Perceived behavioral control contributed to 3% change in intention (Adj $R^2 = .20$, $R^2$ change =.03, $F$ change = 4.10, df 3, 115, $p<.05$). Subjective norms was the best predictor followed by perceived behavioral control ($\beta = .36$, $p<.01$, $\beta = .18$, $p<.05$ respectively). However, attitude failed to predict the intention ($\beta = .01$, $p > .05$).

Thus, the findings suggest that the predictors of intention to perform CVD preventive behaviors among young adults, which could enable nurses and health personnel to develop a theoretical base intervention program for promoting healthy behaviors among the young adults.

Keywords: Young adults, CVD preventive behaviors, Theory of Planned Behavior
Background and significance of the problem

Despite the dramatic medical advancement, Cardiovascular Disease (CVD) is a worldwide leading cause of death over the last 50 years. World Health Organization (WHO 2009) estimated that 17.5 million people died because of CVD in 2005, representing 30 % of all global deaths.

In Bangladesh, CVD has been recognized as primary health problem and rising cause of death for early life (Uddin et al., 2007). WHO research showed that 1,30,006 peoples died due to CVD in 2002 and it is the matter of fear that this figure will highly increase in the coming future (as cited in The Heart Care Foundation of Bangladesh, 2006). Due to the lack of reliable data of its unknown cause, CVD expert believed that rapid globalization and economic changes may influence the young adult to less practice of healthy behaviors. Eating high cholesterol food and consumption of fast food, physical inactivity, childhood obesity, overweight, stress, smoking, and alcohol drinking may be the causes of developing CVD (Ali & Haque, 2004). Without promoting the CVD preventive behaviors, there will be a tremendous lose of lives, adverse impact on young adult’s fruitful life, families, and societies (Malik, 2007).

Kristina, (2007) stated that more than 60 % of CVD risk factors are remarkably preventable by healthy behavior. To develop the CVD preventive behavioral program, it is imperative for the health care professionals to understand the predictors of behaviors. In this study, the Theory of Planned Behavior (TPB) is considered as a guideline for indentifying the predictors of intention to perform CVD preventive behaviors. The TPB proposes that intention is an immediate antecedent of specific behavior and a function of attitude, subjective norms, and perceived behavioral control (Ajzen, 2001). Intention represents person’s motivation or conscious plan to execute its actions through behavior (Armitage & Conner, 2001). Young adult intention or motivation to perform the CVD preventive behavior can be supposed from their readiness and efforts towards CVD preventive behavior.

In Bangladesh, CVD has appeared as a threatening issue for country’s healthcare, therefore promoting healthy behavior needs to focus on preventive behavioral program (Malik, 2007). Thus, this study was conducted to identify the predicting factors on intention to perform CVD preventive behavior among the young adults. The study finding can be used to initiate the program for enhancing healthy behaviors.
Objectives

1. To describe the level of attitude, subjective norms, perceived behavioral control and intention to perform CVD preventive behavior.

2. To determine the predictive ability of attitude, subjective norms, and perceived behavioral control on intention to perform CVD preventive behavior.

Technical terms

Attitude refers to young adult’s opinion or feeling and judgment towards CVD preventive behavior and the outcome of that behavior.

Subjective norms refer to young adult’s opinion or feeling about their significant person’s judgment or opinion and motivation to comply to the significant person’s opinion.

Perceived behavioral control refers to young adult’s feeling and opinion about their ability and degree of confidence to perform the CVD preventive behavior.

Intention refers to the young adult’s willingness or conscious plan or decision to perform or not to perform the CVD preventive behavior.

Framework of the study

The conceptual framework for the study was derived from Theory of Planned Behavior (TPB) proposed by Ajzen in 1985. The TPB provides a useful framework for predicting and understanding the social behavior in general and healthy behavior in particular (Downs & Hausenblas, 2005).

![Figure 1. Theory of Planned Behavior Model](image)

In the present study, the TPB was used as a guideline for explaining behavioral intention of the young adult to perform the CVD preventive behaviors (Figure 1). According to this theory, the most important determinant of human behavior is intention. Intention is a function of attitude, subjective norms, and perceived behavioral control. As a general role, more the favorable attitude and subjective norm, and the greater perceived control to have stronger person’s intention to perform the behavior (Ajzen, 1991; Armitage & Conner, 2001).
Research Method

One hundred and nineteen students were recruited by a systematic sampling method from one college at Dhaka city in Bangladesh. The sample size was calculated by using the Thorndike formula. The data were collected from November 2009 - January 2010.

The instruments were developed by the researcher. They were divided into three scales: 1) demographic characteristic, CVD preventive behaviors related information, 2) three factors related to intention and 3) intention to perform CVD preventive behavior. Second and third scales employed a 5-point response format in Likert-type ranging from 1 to 5 (strongly disagree to strongly agree). Responses from negative items were recorded before calculating the total scale. For attitude scale, it was measured by 20 items consisted of two parts of valued belief and outcome evaluation. The total score of attitude scale was calculated by multiplying the score of two parts and then sum up of multiplied score of each item. The possible score was 5-125 and it was divided into three levels: 5-45 low level, 45.1-85.1 moderate level, and 85.2-125 indicated the high level of attitude. Subjective norms was also measured by 30 items consisting of two parts of - normative belief and motivation to comply. Each part concerned the significant others person: parents, teachers, and close friends. Samples were answered to enumerate their belief on how their significant others person thought about their CVD preventive behaviors and motivation of compliance with them. The total score of subjective norms was calculated by multiplying score of both parts and then sum up of multiplied score of each item. The possible score consisted of 7.50-187.50 and it was divided into three levels. The score indicating low level was 7.50-67.50, moderate level was 67.51-127.51, and high level was 127.51-187.50.

Perceived behavioral control was measured by 22 items, consisted of two parts: control belief and power of control. Samples were asked to judge the ease or difficulty in performing the CVD preventive behaviors and the degree to which they are confidence. The total score of perceived behavioral control score was calculated by multiplying the score of two parts and then sum up of multiplied score of each item. The possible score was 5.5-137 and it divided into three levels. The score from 5.5-49.33 indicated the low level, score of 49.34-93.17 indicated the moderate level, and score of 93.18-137 indicated the high level of young adults perceived behavioral control.

For intention scale, it was measured by 22 items regarding sample’s decision, plan, and willingness towards CVD preventive behaviors. The possible score was 22-110 and it was divided into three levels. The score of 22-51.33 indicated the low level, score of 51.33-80.67 indicated the moderate level, and score of 80.68-110 indicated the high level of
intention to perform CVD preventive behaviors. The total score was computed by summing the 22 items of intention score.

The content was validated by four experts for testing the appropriateness, relevancy, and accuracy of the instruments to measure the study phenomena. First two experts were from Faculty of Nursing, Prince of Songkla University, Thailand and one nurse educator and one public health nurse from Bangladesh. Then back translation technique was used to see the consistency of meaning and appropriateness with original English and translated English questionnaire. Finally, it was found that there was consistency between original English and translated English questionnaire. Cronbach’s alpha the value of attitude, subjective norms, perceived behavioral control and intention scale were .77, .84, .80 and .82 respectively.

After gaining permission from the Dean and Intuitional Review Board, Prince of Songkla University, data collection was processed. First, the researcher took permission from the director of study setting. Second, a brief description about study was given to the samples and consent form was distributed to the eligible samples. Then the questionnaires were distributed to the samples and expected to return it by two weeks. To preserve the anonymity of the samples, confidentiality was strictly maintained by using code number instead of sample name. After completion of data entering, all the documents were destroyed.

Both descriptive and inferential statistics were used for analysis purposes. Descriptive statistics were used for demographic data, CVD preventive behavioral information and the level of predictors and intention. The hierarchical multiple regression analysis was used to test the hypothesis and predictor’s predictive ability towards intention to perform CVD prevention behaviors.

Results

Demographic Characteristic and CVD Preventive Behaviors

The distribution of male and female young adult samples was almost equal. Their mean age was 20.79 years (SD=1.93). The mean body weight was 53.28 Kg (SD=8.76). The mean body mass index was 20.39 Kg/m$^2$ (SD= 2.22). More than half of the samples (58.3 %) experienced vegetarian diet and history of stress (54.2 %). Nearly ninety percent of samples (87.5 %) informed non-smoking behavior and none of them had history of alcohol drinking. About sixty one percent (60.8 %) of them practice daily exercise. Majority of them did not have family history of CVD (80.8 %).

Level of attitude, subjective norms, perceived behavioral control and intention
The level of samples attitude, subjective norms, and perceived behavioral control towards the intention to perform CVD preventive behavior were analyzed. It was found that scores of all the three predictors were at moderate level; attitude (M = 77.17, SD = 14.33), subjective norms (M= 114.87, SD = 24.38) and perceived behavioral control (M=75.35, SD=17.79). Interestingly, level of intention to perform the CVD preventive behaviors was found to be high. (M = 80.50, SD =9.13). The level of each predictor and intention were described in table 2.

Table 2 Minimum, Maximum, Mean, Standard Deviation and Level of Attitudes, Subjective Norms, and Perceived Behavioral Control and Intention of the Samples (N = 119)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Min-Max</th>
<th>Mean</th>
<th>SD</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>49.60-120.00</td>
<td>77.17</td>
<td>14.33</td>
<td>Moderate</td>
</tr>
<tr>
<td>Subjective norms</td>
<td>51.33-172.00</td>
<td>114.87</td>
<td>24.38</td>
<td>Moderate</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>33.82-127.50</td>
<td>75.35</td>
<td>17.79</td>
<td>Moderate</td>
</tr>
<tr>
<td>Intention</td>
<td>61.00-110.00</td>
<td>80.50</td>
<td>9.13</td>
<td>High</td>
</tr>
</tbody>
</table>

Hierarchical Regression Models of the Intention to Perform CVD Preventive Behavior on Selected Predictors

To examine the predictive power of each predictor, a hierarchical multiple regression analysis was employed. Two-step hierarchical regression model was conducted. Attitude and subjective norms were entered into the equation in first step and together were accounted for 19 % of variance (Adj R²=.18, F =13.66, df = 2, 116, p<.01). In the second step, perceived behavioral control was entered into the equation. The statistical significant change in the variance added at 3 % were shown (R² change=.03, F change= 4.10, df 3, 115, p<.05). The total variance for intention was 22 % jointly.

Finally, it was found that subjective norms was the best predictor for intention followed by perceived behavioral control (β =.36, t = 3.70, p<.01, β =.18, t= 2.02, p<.05 respectively). Unfortunately, attitude could not predict the intention to perform CVD preventive behaviors (β =.01, t =.16, p>.05).
Table 5 Hierarchical Multiple Regression Analyses of Attitude (AT), Subjective Norms (SN) and Perceived Behavioral Control (PBC) for Intention to Perform CVD Preventive Behaviors (N=119)

<table>
<thead>
<tr>
<th>Steps/ Predictors</th>
<th>Adj R2</th>
<th>R2 change</th>
<th>F</th>
<th>F change</th>
<th>df</th>
<th>β</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>.18</td>
<td>.19</td>
<td>13.66**</td>
<td>2</td>
<td></td>
<td>.01</td>
<td>.16</td>
</tr>
<tr>
<td>SN</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>.20</td>
<td>.03</td>
<td>4.10*</td>
<td>3</td>
<td></td>
<td>.01</td>
<td>.06</td>
</tr>
<tr>
<td>SN</td>
<td></td>
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<tr>
<td>PBC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.18*</td>
<td>2.02</td>
</tr>
</tbody>
</table>

** p < .01, *P < .05

Predictors: (Constant), attitude, and subjective norms, Predictors: (Constant), attitude, subjective norms and perceived behavioral control, and the Dependent Variable: Intention.

Discussion

Level of Attitude, Subjective Norms Perceived Behavioral Control and Intention

The level of attitude, subjective norms, perceived behavioral control among young adults was found to be at moderate. Moderate level of attitude may be the cause that the young adults are not fully mature with accurate perception to perform CVD preventive behaviors. Fagan, Diamond, Myers, and Gill (2008) found that adolescent lacks the accurate perception, which can change their belief to perform behaviors. Backman et al. (2002) study in California was congruent with current finding which found the moderate level of attitude towards healthful dietary practices. The moderate level of subjective norms of samples in this study may be because the student were from first year and they probably do not spend much time with teachers and friends in this new college setting. They may not have enough time to spend with teacher and friend. Samples and their teacher or friends may not be created a strong relationship behaviors. Similar study finding of Choyhirun et al. (2008) that subjective norms was at moderate level among Thai female adolescent which might be due to the socio-environmental and personal factor.

The moderate level of perceived behavioral control may be influenced by some external and internal factors. External factors include difficulty in finding of healthy food canteen, when they eat outside from family and unavailability of nonsmoking and alcohol drinking zone. The internal factors include the young adults are not fully mature mentally and physically and have less confident to practice CVD preventive behaviors accurately. Baker,
Little, & Brownell, (2003) study was congruent with present study and found the moderate level of perceived behavioral control towards physical activity and healthy eating behaviors.

Finally, it was found that the level of intention was found to be at high level. This can be explained by the fact that young adult had strong willingness or motivation to perform CVD preventive behaviors. In this study, the majority of the samples did not have history of smoking and none of them drink alcohol. Their body mass index were within normal range with most of them did not have family history of heart disease. These findings were congruent with Gao (2007) who found the high level of intention among young college students about weight control behaviors.

The predictors of intention to perform CVD preventive behaviors

The results of the current study revealed that subjective norms was the best predictors (beta = .36, p<.01) for intention to perform CVD preventive behaviors. This finding is consistent with a various empirical study findings (Choyhirun et al., 2008; Fila and Smith, 2005; Sangprem et al., 2008) which found that the majority of the young adult’s intention to healthy behaviors were influenced by subjective norms. In the present study, there may be several reasons behind the fact that subjective norms was the best predictors on intention to perform CVD preventive behaviors. Firstly, social norms in Bangladesh, primary social unit is an extended family. A strong sense of family and community support and rapport may explain the young to perform healthy behaviors. Secondly, Bangladeshi culture is based on the respect for parents, teacher, elders, and friend’s ties which can influence the young to perform healthy behaviors (Country profile, 2009).Thirdly, in Bangladesh the majority of people are Muslim and alcohol drinking is religiously prohibited. Finally, the government of Bangladesh restricts drinking of alcohol and smoking in open area by law that can influence the young adult to control themselves from unhealthy behaviors. Previously, one Thai study mentioned the same opinion as culture and social norms as parent’s supervision, living with own parents, and family relationship influenced the adolescent intention to perform healthy eating behavior (Sangprem et al., 2008).

Furthermore, perceived behavioral control was also predicted to affect the intention to perform CVD preventive behavior in current study which is remarkably consistent with several research findings among the adults using the TPB predictors (Choyhirun et al., 2008; Fila & Smith, 2005; Symons Downs et al., 2006). There might be some possible reasons for validating the predictors of perceived behavioral control in the current study for CVD preventive behaviors. The reasons were availability of healthy food at home and performing the physical exercise at college. In addition, smoking and alcohol free environment was
present at both college and home and individual willingness and effort were influenced by the young adult to eat healthy food performing physical exercise and managing stress.

The fact that the attitude in this study did not predict intention to perform CVD preventive behaviors. Whereas, the finding surprisingly supports that the level of attitude was found to be moderate. This result corroborate with Ferdinand (2004) who reported that the attitude was not a unique predictor of intention to engage in eating a healthy diet even more unexpectedly attitude and intention were moderately correlated (r = .68, p<.001).

There were several barriers responsible for expressing the attitude towards CVD preventive behaviors such as low-involvement situation, individuals might not intend to put much energy in their decision process and they would be more likely to act without using much rational consideration and form their own attitude after the behavior has occurred. In addition, young adult’s unstable thinking about the advantage of CVD behaviors outcome is also the possible reason. As a result, their attitude or opinion towards intention to perform CVD preventive behaviors did not crystallize because they devalued the benefits of CVD preventive behaviors.

In summary, it was found that only 22 % of the variance can be explained by 2 variables of subjective norms and perceived behavioral control for intention. Therefore, it might not be enough to behavioral change of young adults to practice CVD preventive behaviors. Several confounding factors are important in determining whether an intention is translated into action such as knowledge, resource availability, opportunities, past experiences and favorable situation. This suggests that other factors besides intention are driving the CVD preventive behaviors and this can be used to develop intervention program strategies for promoting healthy behavioral practice.

Conclusions and recommendations

In conclusion, the present study provides a partial support evidence of a model for predicting CVD preventive behaviors among the young adults and predictive validity of TPB model as a conceptual framework for understanding the psychological and cognitive determinants for CVD preventive behaviors. Findings indicate that the theory of planned behavior is useful for predicting factors contributing to intention to perform CVD preventive behaviors among young adults. While, we believe our results are innovative and hopefully proactive in context of Bangladesh. Since some weakness do exists within the context of limitation. The sampling from one college may not be representative with general young adults in Bangladesh. In addition, it is suggested that the measurement scale regarding
attitude may need to be modified to obtain a qualitative data that explain individual’s attitude for performing CVD preventive behaviors. In order to cover of CVD preventive behaviors large sample size must be included in the study. It is recommended, that further replication research are needed to test whether interventions that target the predictors of CVD preventive behaviors produce actual behavioral change.

Implication for health education

The findings of this study have many implications for health educators. Health workers or nurses should be aware about the benefit in identifying predictor of CVD preventive behaviors. This could enable nurses and health personnel to develop a theoretical base intervention program for promoting healthy behaviors among the young adults. With attempt to promote, the healthy behaviors among young adult, educational program need to be designed in collaboration with parents, teacher, and friends.

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References


Malik, A. (2007). World heart day: Team up for healthy heart. Bangladesh Cardiac Society and the National Heart Foundation of Bangladesh.


