The Social Sciences 11 (15): 3688-3691, 2016
ISSN: 1818-5800

Predicting Factors Related to Regular Physical Activity among Iranian Medical College Student: An Application of Health Belief Model

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Abstract: One of the important problems in modern society is inactivity. The aim of this study was to determine factors associated with regular physical activity among college students based on Health Belief Model (HBM). This study was a cross-sectional study carried out on 350 students in Kermanshah University of medical sciences. Based on the assignment among different schools, classified sampling method was chosen for data gathering using a questionnaire in three parts including: demographic information, constructs of HBM model and standard International Physical Activity Questionnaire (IPAQ). Data were analyzed by SPSS-21 and using bivariate correlations and logistic regression at 95% significant level. Based on the results, 58.3% had low, 31.7 moderate and 10% vigorous physical activity. Among the HBM constructs: perceived barrier (OR = 0.745) and perceived self-efficacy (OR = 2.414) were the more influential predictor on physical activity. Furthermore, among the background variables: male gender (OR = 3.431) and living in dormitory (OR = 3.872) were major factors to predict physical activity among the college students. The findings of the present study indicated that self-efficacy and reduction of perceived barriers in students had a more effective role in doing regular physical activity.

Key words: Physical activity, college students, health belief model, IPAQ, barrier

INTRODUCTION

A sedentary lifestyle has been pointed out to be one of the main risk factors for cardiac diseases and it is estimated that the risk of these diseases is two times higher in sedentary individuals (Elosua, 2005). Regular physical activity as an important health promotion behavior results in prevention or delay of chronic diseases and premature death. Also, there are multiple evidences indicating that doing regular physical activity results in health promotion, reduction of anxiety and depression symptoms, life satisfaction and improvement of life quality (Stralen *et al*., 2008). Regular physical activity also impacts the risk of brain diseases (Lee *et al*., 2003). Doing regular exercises (30 min a day and two or three times a week) is a proved way for reduction of total cholesterol, increase of High-Density Lipoprotein (HDL), reduction of Low-Density Lipoprotein (LDL) and improvement of general health (Udezue *et al*., 2005). Also, exercises impact the improvement of blood pressure and individuals who exercise will improve faster, in the case of heart attack and their blood pressure will remain in the normal range (Lee *et al*., 2003). In teenagers the amount is higher and 60 min a day of exercise with average to high intensity for at least 5 days a week is recommended (Welk *et al*., 2000). Epidemiological studies indicate that doing regular physical activity is critical for maintaining and increasing bone mass and physical strength and helps individuals in preventing fractures resulted from osteoporosis; furthermore, lack of physical activity increases the risk of cardiovascular diseases as much as 1.5-2 times (Moeini *et al*., 2011). Effective public health programs, health promotion and control of chronic diseases can help individuals maintain and improve their health. In line with this, theories provide the planners with tools to act for knowing behavior for designing and evaluating heathy behaviors and health promotion interventions (Kok, 2014). Selecting a model for health

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education is the first step in the planning process for each health education program and an appropriate model keeps the model in the appropriate path (Eldredge *et al*., 2016; Hoor *et al*., 2016). On the other hand, researches have indicated that studies that are based on theories of psychology and social psychology have a significant role in creating programs that impact health promotion (Ataee *et al*., 2014; Jalilian *et al*., 2015; Morowatishaifabad *et al*., 2015). A major educational model in health education is Health Belief Model (HBM) (Alavijeh *et al*., 2015; Jalilian *et al*., 2013). Health belief model was one of the first model that was exclusively created for health-related behaviors. This belief deals with an individual's perception of an issue regarding heath. The constructs of this model provide a special guidance at micro level for planning the section related to the way interventions are implemented. Health educators explore and describe individuals' health behaviors through this model and by understanding their beliefs regarding the threats of health problem (Eldredge *et al*., 2016). Based on health belief model the adoption of healthy behavior depends on individuals believing a specific health problem, accept its reality, being sensitive to its impact on health, feel at risk, pay attention to the problem as a serious issue in their health and understand its effects on different aspects of their health. Also, it is economic for them and they find the factors inhibiting this action to be less costly compared with its benefits and as the result of such conditions they quickly do preventive healthy behaviors (Alavijeh *et al*., 2015; Jalilian *et al*., 2013). The present study was conducted with the aim of exploring the cognitive factors impacting doing regular physical activities among students at Kermanshah university of medical sciences based on health belief model.

MATERIALS AND METHODS

This cross-sectional study was conducted on 350 university students in Kermanshah University of Medical Sciences, the West of Iran, during 2016. Participants selected in random sampling with probability proportional to size and data were collected by using questionnaire in self-report (HBM variables, International Physical Activity Questionnaire-IPAQ and background questions). This study has been approved by the Institutional Review Board at the Kermanshah University of Medical Sciences (KUMS.REC.1395.286).

The variables assessed in this study included three sections. Prior to conducting the main project, a pilot study was carried out. Initially the relevant questionnaires were administered to 30 students who were similar to study population in order to estimate the duration of the study conduction and to evaluate the reliability of the questionnaire.

Background questions included, age (years), sex (boy, girl), marital status (single or married), live in dormitory (yes or no), filed of education (medical, dentist, pharmacology, nursing, paramedical and health) and history of participants in sport club (yes, no).

The HBM Variables: HBM items were a research design questionnaire. Eight items were designed to measure benefit related to doing physical activity (e.g., if I had physical activity, it would help me to improve my fitness; α = 0.73). Ten items were designed to measure barrier related to doing physical activity (e.g., doing Regular physical activity, expensive for me; α = 0.70). Six items were designed to physical activity self-efficacy (e.g., I believe that I can do physical activity my even weather is cold; α = 0.85). Four items were designed to measure perceived susceptibility abut side effect of physical inactivity (e.g., "I wouldn't have any bad side effects of physical inactivity; α = 0.81). Four items were designed to measure perceived severity abut side effect of physical inactivity (e.g., "physical inactivity, it could seriously affect in my social life; α = 0.72). In order to facilitate participants' responses to the items, all items were standardized to a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

International Physical Activity Questionnaire For physical activity were used an International Physical Activity Questioner (IPAQ) (International Physical Activity Questionnaire Research Committee, 2005). Data were analyzed by SPSS Version 21 using appropriate statistical tests including bivariate correlations and logistic regression at 95% significant level.

RESULTS AND DISCUSSION

The mean age of participants was 22.31 years [SD: 2.50], ranged from 18-29 years. Almost, 51.7% were male and 48.3% were female. The 58.3% were living in the dormitory. Furthermore, 8.3% participants were married. In addition, based on the results, 58.3% had low, 31.7 moderate and 10% vigorous physical activity. Table 1 shows mean and standard deviation and bivariate correlations between the HBM constructs which were statistically significant at either 0.01 level.

A Backward step-wise model building procedure was conducted and finally on 4th step the procedure stopped and the best model was selected, among the HBM constructs: perceived barrier (OR = 0.745) and perceived self-efficacy (OR = 2.414) was the more influential predictor on physical activity (Table 2).

Table 1: Predictor variables of physical activity based on bivariate correlation analysis

Variables	Mean (SD)	Scores range	X1	X2	X3	X4
X1 Susceptibility	12.36 (3.60)	5-25	1			
X2 Severity	13.60 (2.77)	5-25	0.320*	1		
X3 Benefit	14.40 (3.22)	8-40	0.597**	0.378**	1	
X4 Barrier	18.53 (5.72)	10-50	-0.527**	-0.131	-0.325*	1
X5 Self-efficacy	13.35 (3.21)	6-30	0.337**	0.430**	0.473**	-0.443**

*Correlation is significant at the 0.05 level (2-Tailed); **Correlation is significant at the 0.01 level (2-Tailed)

Table 2: Logistic regression analysis for HBM variables related to physical activity

				95% Confidence intervals		
Variables	B	SE	Odds ratio	Lower	Upper	p-value
Final model; Step 4						
Perceived barrier	-0.294	0.085	0.745	0.631	0.880	0.001
Perceived self-efficacy	0.881	0.313	2.414	1.307	4.459	0.005

Table 3: Logistic regression analysis for socio-demographic characteristics related to physical activity

				94% Confidence intervals		
Variables	B	SE	Odds ratio	Lower	Upper	p-value
Final model; step 5						
Ssex	1.233	0.602	3.431	1.055	11.155	0.040
Living dormitory	1.354	0.619	3.872	1.150	13.038	0.029

As mentioned in statistical analyses, a step-wise model building procedure was conducted and among the background variables: male gender (OR = 3.431) and living in dormitory (OR = 3.872) were major factors to predict physical activity among the college students (Table 3).

Overall 41.7% of the students had (intense and medium) physical activity but most of them (58.3%) were in the low level category in terms of having physical activity. In this regard a study that was conducted by Moeini *et al.* (2011) on the college students in the west of Iran indicated a high prevalence of lack of physical activity among Iranian students and he reported that 67.8% of the students had low levels of physical activity. These results are highly lower compared with the studies conducted outside Iran. For example, Abdullah *et al.* (2005) in his study conducted on students in Hong Kong reported that 69% of the student had physical activity. Also, Grubbs and Carter (2002) reported in his study that 68.8% of the explored students had regular physical activity. The comparison of the results of the present study with those of the aforementioned studies indicate a high difference in physical activity between the students in the present study and those in the aforementioned studies and as seen from the results, the level of physical activity in the students in the present study is significantly lower. A sedentary life is recognized as the risk factor for different diseases and the low level of physical activity in the explored students can be alarming to health authorities and the barriers of doing physical activity among the students who are a young group of the society should be studied so that steps are taken for resolving these obstacles after identifying them. Identification of the barriers of doing physical activity in students helps the researchers and health planners to create appropriate strategies for increasing physical activity.

Another finding of the present study was that the physical activity of male students and students living in dormitories was more. In this regard, it should be said that due to the conditions in Iranian universities and the more facilities in student dormitories for male student, regular physical activity was expected to be more in male students than female students. These findings are consistent with the results of other studies (Abdullah *et al*., 2005; Grubbs and Carter, 2002). Considering the findings, it seems that more attention should be paid to the physical activity of female students and students that are not residing in dormitories.

The findings revealed that among health belief constructs, perceived barrier and perceived self-efficacy were the main factors impacting the physical activity of students. The items of the perceived barriers that were assessed in the present study included lack of liking an athlete, lack of facilities and costs and considering the results, it seems that these factors impact the physical activity of Iranian students. In this regard many studies have shown that the constructs self-efficacy and perceived-barriers are predictors of doing physical activity (Levy and Cardinal, 2006; Pakpour and Saffari, 2012) and this is consistent with the findings of the present study. In this regard it should be pointed out that one of the factors determining doing physical activity is barriers of doing these behaviors in individuals and on the other hand, abilities for coping with the barriers of doing physical activity have a positive and significant relationship with the increase of physical activity. In addition, physical activity has a direct relationship with having appropriate place for exercising, equipment and vehicles for doing to the place of exercise or sports

program (James *et al*., 2000; Gomez-Lopez *et al*., 2010). Therefore, it seems that designing interventions for improving self-efficacy of students in doing physical activity and reduction of students' barriers can lead to more useful results regarding the promotion of physical activity in students.

CONCLUSION

The findings of the present study indicated that self-efficacy and reduction of perceived barriers in students had a more effective role in doing regular physical activity.

ACKNOWLEDGEMENTS

This reearch is a part of research project supported by research center for environmental determinants of health, Kermanshah University of Medical Sciences, Kermanshah, Iran. We would like to thank deputy of research of Kermanshah University of Medical Sciences for financial support of this study.

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