Cognitive Determinants of Physical Activity Intention among Iranian Nurses: An Application of Integrative Model of Behavior Prediction

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Abstract

Introduction: Sedentary lifestyle and physical inactivity is recognized as a risk factor for various diseases. Nurses have a special place among healthcare team members, and their numerous roles require nurses to have good physical fitness. The present study aimed to determine cognitive factors related to doing regular physical activity among a sample of Iranian nurses based on the integrative model of behavior prediction (IMBP).

Methods: This cross-sectional study was conducted in 2016 on a sample of 418 nurses who were working in medical teaching hospitals in Isfahan and Sanandaj in Iran. Participants were randomly selected proportionally to staff size among different hospitals. A structured questionnaire was applied for collecting data and data were analyzed by SPSS version 16 using correlations, linear and logistic regression statistical tests.

Results: Mean age of the subjects was 33.1 years (range, 21-53 years). 66.6%, 25.4%, and 8% had low, moderate, and severe physical activity, respectively. The best predictors for doing regular physical activity were skills with OR of 1.203 [95% CI: 1.093, 1.324], and attitude with OR of 1.023 [95% CI: 1.023, 1.034]. The IMBP variable, accounted for 34% of the variation in the outcome measure of the intention to do physical activity.

Conclusion: Based on our result, it seems that designing and implementation of educational programs to increase attitude and skills regarding doing physical activity may be useful in the promotion of physical activity.

Key words: Cognitive Determinants, Physical Activity, Intention, Nurses, IMBP

Introduction

Nowadays one of the health problems is sedentary lifestyle. In this regard, studies have shown that more than 80 percent of people do not have enough regular physical activity (1). The prevalence of inactivity in urban and rural areas of Iran, with an emphasis on leisure physical activities between men and women in the age group of 15-64 years, was 76.3% and 55.8% respectively, with the overall percentage of 67.6 percent (2). Sedentary lifestyle and physical inactivity is recognized as a risk factor for various diseases. It is also raised as one of the main modifiable risk factors for cardiovascular diseases and plays an important role in the development of other diseases (3). Researchers have shown that adequate physical activity has a beneficial effect on blood pressure, obesity and serum lipids. So that, regular exercise is proven to reduce total cholesterol, increase high-density lipoprotein, reduce low-density lipoprotein, and improve the general health of the body (4). As a significant health promoting behavior, regular physical activity can prevent or delay the occurrence of chronic diseases and early mortality (5). Nurses have a special place among healthcare team members, and their numerous roles require nurses to have good physical activity (6). Nurses cannot meet the needs of patients unless they pay great attention to the ways of promoting their own lives and health (7). Therefore, paying more attention to their health condition and determining risk factors of nurses, is very important (8). Studies have shown that the most effective programs are theory-based, rooted in social psychology (9, 10). Previous research has also shown that psychological studies and social psychology theories play an important role in creating programs that impact on health promotion. (11-17). The theories that examine the role of these factors in predicting behavior include the theory of rational action and the theory of planned behavior (10). By developing the theory of rational action and the theory of planned behavior, Fishbein has proposed an integrative model of behavior prediction in which several factors such as attitude, subjective norms, self-efficacy or perceived behavior control, behavioral intention, skill, and environmental constraints have been considered effective (18). This research aims to find cognitive determinants of physical activity intention among Iranian nurses based on application of integrative model of behavior prediction.

Methods

Participants and procedure
This cross sectional study was a part of a project conducted among Iranian nurses during 2016, with the goal of providing knowledge for the promotion of physical activity. The sample size was calculated at 95% significant level according to the results of a study by Tofighi et al (19) which reported that about half of Iranian nurses were lower than the Average levels of physical activity and considering the 20% attrition rate (rate of drop-out among participants), a sample of 418 was estimated. The study population included all nurses working in teaching hospitals in Isfahan and Sanandaj. In this study, a major teaching hospital in the aforementioned cities was randomly selected and then specifically-designed questionnaires were distributed among nurses who volunteered for this research and the required information was collected. It is worth mentioning that all the participants were informed about the project and confidentiality of the information, as well as the purpose of the project, and entered the study with consent. All questionnaires were anonymous and incomplete questionnaires were excluded from the study. The study protocol was approved by the institutional review board and ethics committee of the Isfahan University of Medical Sciences, Isfahan, Iran.

Measures
The participants were instructed about how to fill out the designed self-report questionnaire before gathering the required information. The questionnaire used here included three sections including demographic information questions, integrative model of behavioral prediction constructs, and the short form of the international physical activity questionnaire (IPAQ).

A: Demographic Characteristics
Background data inquired about included age, gender, marital status, education, weight, height, waist circumference, record of membership in the sports club, duration of membership in the sports club, current sport club membership status, and job history.

B: IMBP Variables
IMBP items were designed based on standard questionnaires applied to physical activity (20, 21). Before data collection, its reliability was evaluated using the alpha coefficient method through a preliminary study on 30 cases in the control group. This questionnaire consisted of the constructs of attitude (10 questions), subjective norms (5 questions), and self-efficacy (18 questions - Bandura's standard physical activity self-efficacy questionnaire (22), environmental constraints (10 questions), skills (4 questions) and behavioral intention (4 questions). In order to measure the score of each construct, the mean of the total score of that construct was considered. Furthermore, at least 10 faculty members and qualified individuals were consulted to determine the validity of the questionnaire and face and content validity were determined. In order to determine content validity, CVR and CVI were calculated according to the opinion of experts.

C: Short form of the International Physical Activity Questionnaire (IPAQ)
This questionnaire asks questions about the amount of intense and moderate physical activity, walking, and the average duration of sitting over the last week (7 days). Questionnaire score is reported according to the IPAQ protocol. The total physical activity of an individual per week is measured in minute/week –MET format. The term MET refers to the expression metabolic equivalent. MET is a unit used to estimate the metabolic cost of physical activity. One MET is approximately equal to the amount of resting energy expenditure for an individual (23). All

physical activity can be classified with multiples of resting energy expenditure.

The questionnaire includes questions about the physical activity of participants. This section can be finally used to classify physical activity into three categories: Weak or low, moderate, and severe. This questionnaire has been used by the World Health Organization to evaluate the level of physical activity. It has also been used in several domestic studies and its validity and reliability have been confirmed. The intensity of energy expenditure for all of the activities during the past 7 days was calculated according to IPAQ instructions; if the total calculated energy during the week is 600 to 3000 Met/Cal/Week, the intensity of the activity of the relevant questionnaire is moderate and if more than 3000 Met/Cal/Week, the intensity of the activity of the relevant questionnaire is severe. Moreover, if the amount of consumed energy is less than 600, the person is classified as: with no regular physical activity (24).

Statistical Analysis
Data were analyzed by SPSS version 16 using appropriate statistical tests including bivariate correlations, linear and logistic regression statistical tests at 95% significant level.

Results

Mean age of the subjects was 33.1 years (range, 21-53 years). Among the participants, 73.2% were female, respectively, among whom 88 were single, 268 married, and 63 did not answer the marital status question. Regarding education, 90.9% had bachelor's degrees and 9.1% had master's degree. The results of the present study showed that 66.6%, 25.4%, and 8% had low, moderate, and severe physical activity, respectively.

Table 1 shows the Zero-order correlations. Statistical significance was calculated at 0.01 and 0.05. The results showed intention was correlated with the attitude (r=0.159), subjective norms (r=0.222), self-efficacy (r=0.198), skills (r=0.553), and environmental constraints (r=0.128). Environmental constraints was significantly correlated with self-efficacy (r=0.130), and skills (r=0.196). In addition, skills was correlated with the attitude (r=0.143), subjective norms (r=0.218), and self-efficacy (r=0.147). Furthermore, self-efficacy was significantly correlated with attitude (r=0.133). Finally, subjective norms was significantly correlated with attitude (r=0.136).

Table 1: Correlation between different components of IMBP

Component	Mean (SD)	X1	X2	X3	X4	X5	X6
X1. Attitude	58.86 (11.23)	1					
X2. Subjective norms	15.18 (3.75)	0.136**	1				
X3. Self-efficacy	84.52 (27.68)	0.133*	0.082	1			
X4. Skills	12.07 (2.95)	0.143**	0.218**	0.147**	1		
X5. Environmental constraints	27.41 (5.48)	0.048	0.101	0.130*	0.196*	1	
X6. Intention	12.01 (2.90)	0.159**	0.222**	0.198**	0.553**	0.128*	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Linear regression analysis was performed to explain the variation of physical activity intention. As can be seen in Table 2, Collectively, IMBP variables accounted for 34% of the variation of physical activity intention.

Table 2: Predictors of the intention to physical activity

Variable	B	SE B	B	T	p-value
Final Model, Step 4					
Self-efficacy	0.021	0.011	0.086	1.503	0.068
Skills	0.530	0.043	0.575	12.186	< 0.001

Adjusted R squared = 0.34, F: 80.190, and P <0.001

However, in Table 3, by dividing physical activity behavior into two groups of people without physical activity (people with poor physical activity) and those with physical activity (people with moderate and severe physical activity) and using logistic regression, it was observed that the constructs of attitude and skill were more important regarding physical activity behavior.

Table 3: Multiple logistic regression analysis for IMBP components related to physical activity

Variables	Odds Ratio	95.0% CI		P value
		Lower	Upper	
Final Model, Step 4				
Attitude	1.023	1.013	1.034	< 0.001
Skills	1.203	1.093	1.324	< 0.001

Discussion

The aim of this study was to determine the factors related to physical activity among a sample of Iranian nurses, based on integrative model of behavior prediction. Determined factors related to physical activity among nurses is important for implementing physical activity promotion programs. The results of the present study indicated that attitude and skill were the most effective predictors of regular physical activity.

According to the results, 66.6% of nurses had a sedentary life style. The results of a study by Jalilian et al. showed that about 65% of women working at Hamedan University did not have physical activity (25). A study of physical activity of employees living in Yazd, Mazloomi et al. also showed that about 73.6% of employees did not have physical activity (26). The results of a study by Skaal et al. on the employees of a public hospital in South Africa showed that about 75.5% of the employees in this hospital had no physical activity (27). These statistics are consistent with the results of this study. These results indicated that status of physical activity is low among nurses. This warns health policy makers in Iran that it requres special attention to design physical activity promotion programs.

Our findings indicated, IMBP variables accounted for 34% of the variation of physical activity intention. In this regards, Araújo-Soares et al., carried out research on adolescents and reported that behavioral intention was a strong predictor of physical activity (28). On the other hand, a review study carried out by Sheeran suggests that intention in 82,107 study samples can only be responsible for an average of 28% of behavior variance (29). Therefore, there is a gap between intention and action. Despite the importance of factors influencing behavioral intention, there are several important controlling factors which determine how intention to adopt the behavior is interpreted.

The findings revealed that among an integrative model of behavior prediction constructs, attitude and skills were the main factors predicting physical activity among nurses. In this regard many studies have shown that self-efficacy (or skills) is one of the main predictors of doing physical activity (22, 30) and this is consistent with the findings of the present study. Therefore, it seems that designing interventions for improving self-efficacy related to doing physical activity can lead to more useful results regarding the promotion of physical activity.

Our study investigated the attitude role in doing physical activity among Iranian nurses. Attitude is defined as a person's beliefs about the results of a behavior and his/her evaluation of it(10). Therefore, it seems that training courses should focus on improving positive attitude on physical activity such as improving body fitness and stress management.

This study had a few limitations. The main limitation of this study was self-reporting, which may have led to bias.

Conclusion

Comprehensive preventative health education programs need to emphasize on psychological factors that mediate and predict health-related behaviors. Based on our results, it seems that designing and implementation of educational programs to increase attitude and skills regarding doing physical activity may be usefulness of the results in order to promote physical activity.

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