ISSN: 2383-2568 *Quarterly of International Archives of Health Sciences 2015;2(4):157-162*

Assessing the Physical Activity of Health Volunteers Based on the Pender's Health Promotion Model

ARTICLE INFO

Article Type
Descriptive Study

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How to cite this article
Rahimian M, Mohammadi M, Mehri A, Rakhshani M.H. Assessing the Physical Activity of Health Volunteers Based on the Pender's Health Promotion Model. International Archives of Health Sciences. 2015;2(4):157-162.

ABSTRACT

Aims Physical inactivity has been identified as the 4th leading risk factor for global mortality causing an estimated of 3.2million deaths per year. This study aimed to assess the physical activity of health volunteers with Pender's Health Promotion Model.

Instrument & Methods This cross-sectional analytical study was performed on 80 health volunteers in Torbat-e-Jam City, Iran, in 2015. A researcher-made questionnaire with the following sections was used to gather data; perceived benefits, perceived barriers, self-efficacy, interpersonal influences, positive emotion, commitment, modeling and competing preferences. SPSS 16 sofware was used to analyze data by independent T, Pearson's correlation coefficient and linear regression tests.

Findings There was no significant difference between the scores according to educational levels, age groups, BMI score, marital status, habitat and experience as a health volunteer duration. Physical activity had positive correlation with perceived benefits, self-efficacy, commitment, positive emotion and situational influences and a negative correlation with perceived barriers. Situational influences, as the strongest predictor of the physical activity, predicted 35.1% of it and then positive emotions predicted 34.7% and self-efficacy predicted 23.4% of physical activity.

Conclusion The level of physical activity in health volunteers of Torbat-e-Jam City, Iran, is not appropriate and is less than moderate.

Keywords Physical Activity; Attitude of Health Personnel; Health Promotion

CITATION LINKS

[1] Stage of exercise behaviour change: A pailot study of ... [2] Physical activity guidelines for ... [3] Students' physical activity: An analysis according to Pender's health ... [4] International study of objectively-measured physical activity and sedentary time with body mass index and ... [5] Effect of a health education intervention on physical activity knowledge, attitude and behavior in ... [6] Assessing stages of exercise behavior change, self-efficacy and decisional balance in Iranian nursing and ... [7] School-based physical activity programs for ... [8] ocation, timing, and social structure patterns related to physical activity participation in ... [9] The Study of Knowledge, attitude and practice towards physical activity and ... [10] Neighborhood influences on physical activity in middle-aged and ... [11] A healthy city is an active city: A physical ... [12] Promoting physical activity; a guide for ... [13] Application of the health promotion model to predict stages of ... [14] A survey on the effects of the ... [15] Predictors of women's exercise behavior based on developed theory of planned behavior with action ... [16] The survey of theory of ... [17] Prevalence of physical activity among adults in a ... [18] The effect of health promotion model-based training on ... [19] Factors influencing use of hearing protection among ... [20] predictors of use of hearing protection among a representative sample of ... [21] Effect of the educational program based on Pender's theory on ... [22] Pender's health promotion model in ... [23] Application of the health promotion model in ... [24] Effects of a school-based intervention on the basis of ... [25] Effectiveness of a physical activity promotion program on ... [26] Evaluation of regular physical activity and ... [27] Impact of physical activity intervention ... [28] Effect of first aid educational program in ... [29] Effectiveness of education ... [30] Evaluation of ... [31] Prevalence of ... [32] Self-efficacy, perceived benefits and barriers to ... [33] The survey physical activity status of ... [34] The nutritional status and the relationship between ... [35] Determinants of physical activity based on ... [36] Exercise and its relation to self-efficacy based on stages ...

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Article History
Received: Octo 26, 2015
Accepted: December 13, 2015
ePublished: December 31, 2015

Introduction

Physical activity with moderate-intensity, e.g. walking, cycling, or participating in light sports, is an important parameter on physiological health that protects the individuals against several common diseases like risk of cardiovascular diseases, diabetes, colon and breast cancers, and depression [1, 2].

After the industrial revolution, socioeconomic and cultural changes and many technological achievements led to a new lifestyle for the world population which was more sedentary [3]. The World Health Organization (WHO) estimates that 1.9million deaths worldwide are attributed to physical inactivity and at least 2.6million deaths are results of being overweight or obese. In addition, WHO estimates that physical inactivity causes 10 to 16% of cases each of breast, colon, and rectal cancers as well as type 2 diabetes, and 22% of coronary heart diseases; also other chronic diseases has rapidly increased in recent decades [4-7]. Increasing moderate-intensity or vigorous-intensity physical activity can decrease biomarkers of chronic inflammation and increase anti-inflammatory effects, leading to better heart health and a decreased risk of osteoporosis, diabetes mellitus, and cachexia [8]. According to the WHO, lack of physical activity globally is the 4th major risk factor for mortality [9].

Physical activity is any bodily movement produced by skeletal muscles that result in energy expenditure above resting level. This includes walking or cycling for transport, dance, traditional games and pastimes, gardening and housework as well as sport or deliberate exercise [10, 11]. The minimum physical activity needed to maintain and improve health is 30 minutes with moderate-intensity 5 days a week in adults. To achieve more extensive health benefits, a person should perform 300min or more per week of moderate-intensity activity, 150min per week of vigorous-intensity activity, or an equivalent combination of both. Physical activity volume is the product of frequency (episodes per week; often expressed as days per week), intensity (level of effort; often expressed as an individual's perception of effort as being light, moderate, or vigorous intensity or as a multiple of resting energy expenditure, known as a MET), and duration (time per episode). Physical activity must have at least moderate-intensity to be beneficial to health. Time spent in light-intensity activities (such as light housework) and sedentary behaviors (such as watching TV) do not count toward meeting the aerobic physical activity guidelines [5, 12]. Most Americans are not physically active enough to achieve these health benefits [10]. Report of the Health and Medical Education Ministry of Iran shows that 60% of the Iranian adults have no or very little physical activity (not enough, less than 2.5 hours per week)[6, 9, 13-16]. Physical activity levels were initially classified as low-, moderate-, or high-intensity, defined by the International Physical Activity Questionnaire (IPAQ) core group as follows [17]:

- Low: no activity or some activity reported, but not enough to satisfy the requirements of the other activity categories;
- Moderate: any of the following 3 criteria: (a) 3 or more days of vigorous-intensity activity for at least 20 minutes per day, (b) 5 or more days of moderate intensity activity or waking for at least 30 minutes per day, or (c) 5 or more days of any combination of walking, moderate intensity, or vigorous-intensity activities achieving a minimum of 600MET-min/week;
- High: either of the following 2 criteria: (a) 3 or more days of vigorous-intensity activity accumulating at least 1500MET-min/week or (b) 7days of any combination of walking or moderate- or vigorous intensity activities achieving a minimum of 3000MET-min/week.

Many theories and models applied to orientate physical activity behavior; one of them is Pender's Health Promotion Model (HPM) [18]. The HPM uses selected attitudes and beliefs such as perceived benefits and barriers, perceived self-efficacy, and interpersonal factors (such as norms, modeling, and support of others) to predict and explain health behavior [19, 20]. HPM is a descriptive model that predicts health behaviors. Meta-analytic reviews of the large number of studies adopting the model have demonstrated the important contribution it has made to the prediction of health behaviors like physical activity and now its structures are known as important determinants of physical activity behavior [3, 13, 14, 21-24]. The

HPM has yielded high levels of prediction in previous studies including use of hearing protection in construction and factory workers [3, 18, 19, 25, 26].

Self-efficacy has been described as a predictor of physical activity intervention outcomes rather than an independent outcome [27]. Empowering people to tackle inequality in access to opportunities for physical activity and health often requires capacity-building (helping community members build the skills and confidence needed to fully participate) [11]. Training health volunteers who are in fact one of the members of the community seems effective [28]. The health volunteers in Iran are usually housewives who have enough time and interest, and cover up and educate about 50 families from their neighbors. They are known as not salaried workers and considered a bridge between the community and health care system [29].

As there have not been similar studies in Iran in terms of physical activity in health volunteers, this study aimed to assess the physical activity of health volunteers with Pender's Health Promotion Model.

Instrument & Methods

This cross-sectional analytical study was performed on 80 health volunteers (all women) in Torbat-e-Jam City, Iran, in 2015 which were selected by multistage random sampling method. According to the variant parameters and similar studies [13, 18, 23, 24, 30], the number of samples to be tested estimated about 75 that 80 people were taken to ensure the results.

The instrument to gather data was a researcher-made questionnaire. The first part of the questionnaire was about demographic information (age, experience, marital status, educational level, and body mass index). The following part had some sections about structures of the Pendar HPM; perceived benefits (10 questions), perceived barriers (5 questions), self-efficacy (8 questions), interpersonal influences (8 questions), positive emotion (5 questions), commitment (6 questions), modeling (8 questions) and competing preferences (7 questions). The validity of the questionnaire was confirmed by 8 experts in the field and its reliability was calculated as 0.80 using Cronbach's alpha method. The perceived benefits, perceived barriers, and positive emotion were set on the basis of the 5-item Likert response (from "too much" to "not at all") and self-efficacy, interpersonal influences, modeling, commitment and competing preferences on the 3 options (including "yes", "partly" or "no").

The total amount of physical activity in the week leading up to the research was calculated in "MET-min/week" unit. MET (metabolic equivalent of task) is a unit that used to estimate energy expenditure physical activity. One MET is defined as the energy expended at rest. The MET intensities used to score IPAQ in this study were vigorous (8 METs), moderate (4 METs), and walking (3.3 METs). To get weekly MET scores, multiply the MET value for each activity by the minutes expended in that activity each time (MET×min×d), then add all the activities over the time period. For example, for a person who walks 4 days for 30 minutes, do moderate physical activity 3 days for 20 minutes and do intense activity 1 day for 10 minutes, the physical activity is calculated as below:

(1×10×8) + (3×20×4) + (4×30×3.3) = 716MET-min/week

The questionnaire was distributed amongst the target group and completed. The data from the questionnaire was then extracted and analyzed in SPSS 16 using independent T (For Comparison the scores of physical activity of the participants according to demographic parameters), Pearson's correlation coefficient (To determine the correlation between physical activity and Pendar HPM parameters) and linear regression (To determine the predictors of health promotion model parameters) tests.

Findings

The mean age of participants was 25.1±2.5 years, height was 159.2±5.8cm and weight was 63.8±10.4kg. There was no significant difference between the scores according to educational levels, age groups, BMI score, marital status, habitat and experience as a health volunteer duration (Figure 1).

The mean of perceived benefit score was 31.3±4.5 that was evaluated as "good" but self-efficacy and behavior scores were 5.8±4.1 and 912.4±750.8 that were assessed as "poor". Physical activity had positive correlation with

perceived benefits, self-efficacy, commitment, positive emotion and situational influences and a negative correlation with perceived barriers (Figure 2).

Overall 66.8% of the physical activity was predicted by Pendar's Health Promotion Model variables. Situational influences, as the strongest predictor of the physical activity, predicted 35.1% (β=0.351; p=0.001) of it and then positive emotions predicted 34.7% (β=0.347; p=0.001) and self-efficacy predicted 23.4% (β=0.234; p=0.016) of physical activity.

Figure 1) Comparison the scores of physical activity of the participants (n=80) according to demographic parameters by independent T test (Numbers in parentheses are percent)

Demographic parameters	Frequency	Score (MET-min/Week)	p Value
Age (year)			
20 and less	1 (1.2)	1889.4±371.8	0.14
21-24	32 (40)	1084.5±928.6	
25-29	44 (55)	766.2±528.9	
30 and more	3 (3.8)	860.6±262.2	
BMI (kg/m^2)			
Normal <25	47 (58.5)	1131.9±876.7	0.006
Overweight 25-30	24 (30)	635.2±365.9	
Obese ≥30	9 (11.2)	506.6±264.7	
Marital status			
Single	12 (15)	897.1±721.1	0.938
Married	68 (85)	915.2±760.6	
Habitat			
Urban	32 (40)	717.8±506.5	0.058
Rural	48 (60)	1024.2±857.5	
Educational level			
Primary education	17 (21.2)	613.1±349.0	0.108
High school education	50 (62.5)	944.9±781.7	
College degree	13 (16.3)	1179.1±921.3	

Figure 2) Correlation between physical activity and Pendar HPM parameters

Parameters	Physical Activity	1	2	3	4	5	6	7	8
1- Perceived benefits	0.419**								
2- Perceived barriers	-0.423**	-0.094							
3- Self-efficacy	0.543**	0.361**	-0.476**						
4- Interpersonal influences	0.197	-0.075	-0.121	0.11					
5- Modeling	0.002	-0.176	0.026	-0.17	0.736**				
6- Commitment	0.364**	0.492**	-0.091	0.302**	0.299**	0.042			
7- Competing preferences	-0.155	-0.152	-0.218	0.252*	0.178	-0.035	0.207		
8- Positive emotion	0.556**	0.240*	-0.334**	0.316**	0.122	0.16	0.067	-0.237*	
9- Situational influences	0.48**	0.277*	-0.007	0.211	0.399**	0.201	0.519**	-0.052	0.045

*significant at 0.05; **significant at 0.01

Discussion

Our results showed that 55% of women who have participated do not have physical activity that is consistent with the report of National Center for Chronic Diseases Prevention of America that more than half of adults in that country do not have physical activity [14]. This finding is also consistent with Irwin that has shown that more than one-half of university students in the United States and Canada are not active enough to gain health benefits [31]. Some studies have reported that prevalence of sedentary in Iran is high [5, 32]. Jalilian *et al.* study also shows that 65% of working women do not have adequate physical activity [33].

Associations of sedentary time with BMI may be weak and inconsistent because BMI is largely dependent on other factors, e.g. energy intake, PA and heredity [4]. It is known that the practice of physical activities in overweight individuals is usually lower than that of non-obese. However, the tendency to a sedentary life is still a matter of discussion as to whether it is a cause or consequence of obesity. The findings of our study indicated the amount and intensity of physical activity in urban volunteers had a significant correlation with body mass index. So, the people who have normal weight relative to height, have behavioral scores higher than overweight and

obese people. This is consistent with Dust-Mohammedian *et al.* who have examined the relationship of physical activity and body mass index of students in Semnan [34] and the Noroozi *et al.* [35].

A significant inverse correlation between physical activity and perceived barriers in order to promote physical activity in our study suggests that physical barriers must be eliminated for candidates. In our study, an average score of 5.7 out of 16 represented a low self-efficacy toward physical activity that is aligned with the Karimi & Eshrati [18] and Mazloomy Mahmoudabad *et al.* [36]. In our study, the lack of sports facilities, lack of time and cost are the most important barriers that were perceived while Karimi & Eshrati [18] have reported sports facilities, busy and in the clerical and Agha-Mollaii *et al.* [32] have reported lack of time and lack of sports facilities as the major obstacles to physical activity. Most of our participants were aware of the advantages and benefits of physical activity that is consistent with the Agha-Mollaii *et al.* [32] and Karimi & Eshrati [18].

The cost of transportation of rural volunteers to the city and refusing to name the questionnaires were the limitations of the study. Promoting health, therefore, depends on attention to the quality of interpersonal relationships, a balanced dietary supply, good living conditions and access to healthcare services, access to information and formal or professional education and doing sports or other according to 3 basic components; individual characteristics and experiences (previous behaviors and personal factors), feelings and knowledge about the desired behavior (perception of benefits, barriers, self-efficacy, inter-personal influences), and desirable health promotion behavior (commitment to the plan of action, demands and preferences).

Conclusion

The level of physical activity in health volunteers of Torbat-e-Jam City, Iran, is not appropriate and is less than moderate.

Acknowledgments: The authors must acknowledge respected authorities of Torbat-e-Jam City health center and health volunteers also participated in this study.

Ethical Permission: The Ethics Committee of Sabzevar University of Medical Sciences approved the study.

Conflicts of Interests: We certify that there is no conflict of interests in this manuscript.

Funding/Support: This article is the result of an academic research thesis in the city of Torbat-e Jam, which was conducted with financial support from Sabzevar University of Medical Sciences.

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