Health Education and Health Promotion (HEHP) (2014) Vol. 2 (4)

Applying the Theory of Planned Behavior in the Study of Psychological Factors Affecting on Physical Activity of Female Employees

Masoud Shafieinia[1], Alireza Hidarnia[2]*, Anoushirvan Kazemnejad[3], Reza Rajabi[4]

Abstract

Aim: Insufficient physical activity in women exposes them to problems such as overweight, diabetes, depression and cardiovascular diseases on top. In between, employees have minimum physical activity due to type of their job. The goal of this study was determining psychological factors effective on the physical activity of women working in University of Tehran based on the theory of planned behavior.

Methods: The research population included female office workers from the University of Tehran, who were selected through a call at this university in 2014 for this descriptive analytical cross-sectional study. For data gathering, a questionnaire was used with acceptable validity and reliability including demographic information and constructs of the Theory of Planned Behavior (TPB) as well as International Physical Activity Questionnaire (IPAQ). Data were analyzed using SPSS21. The statistical bivariate correlation test and stepwise regression test were employed at the significance level of 0.05.

Findings: In this study, behavioral intention had a positive and significant relation with perceived behavioral control (P=0.000) and attitude (P=0.042). Also behavioral intention had a positive and significant relation with physical activity (P=0.000). Stepwise regression analysis was used to evaluate important factors effective on prediction of behavior and intention; it determined 40% of intention variance (R2= 0.408).

Conclusion: The results of the study showed that constructs such as attitude and perceived behavioral control can be effective on the behavioral intention and physical behavior of female employees; therefore, these factors must be seriously considered in educational planning for this group of the society.

Keywords: Theory of Planned Behavior, Physical Activity, Employees

1. Ph.D. Candidate, Department of Health Education & Health Education, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: msh11022@yahoo.com
2. Professor, Department of Health Education & Health Education, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: hidarnia@modares.ac.ir
3. Professor, Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Email: kazem_an@modares.ac.ir
4. Professor, Department of Health and Sport Medicine, Faculty of Physical Education and Sport Sciences, University of Tehran, Tehran, Iran
Email: rrajabi@ut.ac.ir

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Introduction

Today, lack of physical activity (PA) is one of the health problems in the world, which is more obvious in women. Insufficient physical activity in women exposes them to problems such as overweight, diabetes, and depression, and in case of continuing this life-style, risk of severe diseases, especially cardiovascular diseases (CVDs) will increase dramatically. Inactive people suffer from CVDs almost two times more than active people [1].

Similarly, physical activity prevents diabetes type 2 [2-4] and reduces levels of blood sugar in patients suffering from diabetes [5]. Skeleton proper stimulating is achieved by suitable exercises, which also leads to development of bones [6]. It also improves muscular balance and power, and helps prevention of osteoporosis; as a result, risk of some incidents such as falling and bone fracture is reduced [1]. Though some of these healthy effects are indirectly due to prevention of overweight, but physical activity itself has considerable healthy effects, regardless of changes in the weight of individuals [7, 8].

The prevalence of inactivity is higher among women than men (31% vs. 28%), and increases with age; 25.6% for women aged 18-34 years vs. 42.1% for women over 65 [9]. Cross-sectional studies showed that physical activity level decreases throughout the lifespan with a non-linear process; one of the most dominant declines of participation in physical activity happens in adulthood [10]. A number of observational cross-sectional studies examined the relationship between PA and life course events, and identified five broad areas of life events. These were: change in employment status; change in residence; change in physical status; change in relationships; and change in family structure [11].

According to the recommendations of US Heart Association, it is necessary for adults (18-65 years) to have 30 minutes aerobic activity with moderate intensity 5 days a week or 20 minutes intensive aerobic activity at least 3 days a week [12]. Unfortunately, people, especially women have a poor participation in physical activity, which decreases with aging [13]. Meanwhile, employees have the least physical activity when they are present at workplace [14]; practically, there is no time for this type of activities due to lengthy working hours, and too much time of going to work and vice versa. So, one of the important tasks of health teams is determining the psychological factors affecting physical activity among people to provide strategy and make them more active.

Applying the theories of behavioral change about complex behaviors such as PA leads to identify effective factors and their relations [15].

Meta-analytic reviews [16, 17] have demonstrated

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that TPB [18] can be used to understand the psychosocial determinants of PA behaviors and, therefore, can provide a foundation for intervention design to increase PA.

Theory of planned behavior is used widely to study PA behavior in several populations; it provides a framework for regular and systematic study of subjects related to decision making for a behavior [18]. Defranc (2008) proposed the Theory of Planned Behavior (TPB) as the most reliable theory to predict, describe and perceive physical activity. According to this theory, the most important determinant of people's behavior is behavioral intention; the achieved intention includes attitude, subjective norms, and perceived behavioral control [19].

The reason of choosing women for this study was that they have more difficulties for participation in PA. The reasons for women disaffiliation in PA include having no attendant to physical activities, family commitments, lack of information, shyness, lack of vehicle, and physical disability [20]. In Iran, social and cultural barriers are among the important factors that have deep impact on the decrease of presence of women in physical activities. Existences of man-centered culture in sports community, fear of undermining religious beliefs, thought of negative impacts of sports on feminine appearance, inattention of authorities to women sports, etc. are among the socio-cultural factors effective in this field [21].

Therefore, it needs to identify most effective constructs on behavior and their direct or indirect effect because of the importance of PA promotion and identification of factors influential on behavior based on theoretical principles. Thus, the goal of current article is to study effective factors on PA promotion in female employees of the University of Tehran based on TPB.

Methodology

This descriptive-analytical cross-sectional study was designed to determine the factors contributing to the promotion of PA on 95 female office workers of the University of Tehran. The research population was selected through a call at this university in 2014.

The sample size was estimated using the results of a study [14] and using the Pocock method to compare ratios (α=5% & β=20%). With an expectation of a 10% reduction in the sample, we needed at least 80 people. Following the call for participation in the study, 114 people of female office workers of the University of Tehran expressed interest to participate in the study. According to the inclusion & exclusion criteria, 108 people were selected. The inclusion criteria were: being in the age range of 18–60 years, and be the employee of the University of Tehran. Exclusion criteria were unwillingness to

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participate in the research and having disability diseases based on medical examinations. However, the number of participants, because of their unwillingness to continue and absence in the next stages, was reduced to 95 people.

As mentioned before, the minimum physical activity to maintain health on adults is 30 minutes at least 5 days a week [12]. So the aim of the study was determined in accordance with this recommendation. Thus, whenever the questionnaire asks about PA, it refers to the above definition. In this study, the sample size included women employees of the University of Tehran who were selected by a call to participate in the research. They filled the questionnaires out. The questionnaire was designed based on the TPB with questions about demographic information; then necessary data were gathered.

In this research, data collection tools included 3 parts, in which the required information were collected from the respondents by self-report.

First: Demographic information: This part includes 8 questions about personal information such as age, height and weight, education level, type of employment and working experience, marital status and number of children, and also experience of participation in physical activities.

Second: Here, the questions were about the model constructs: Likert-type questions with 7 ratings about attitude, subjective norms, perceived behavioral control and behavioral intention. The questionnaire was translated and used previously in Iran [22]. Therefore, in this research, evaluation and validation of the content and structure of the questionnaire have not been done. But an initial study was conducted on 30 university employees for measurement reliability of the questionnaires. Applying Cronbach's alpha test, the reliability of the questionnaires was confirmed as below:

Attitude includes 7 questions (alpha coefficient= 0.94); for example, 'participation in regular physical activity is … for me' was measured with a 7 scale rating from (1: usefulness) to (7: useful), and achieving higher score indicates stronger attitude towards having PA.

Subjective norms were measured by three questions (alpha coefficient= 0.77); for example, 'idea of important people for me is that I should exercise regularly' with a 7 scale rating from (1: disagree) to (7: agree), and achieving higher score of the subjective norms encourages stronger PA.

Perceived behavioral control was also measured with four questions (alpha coefficient= 0.89); for example, 'to what extent is participation in regular physical activity controlled by you?' was measured with a 7 scale rating from (1: uncontrollable) to (7: completely under control), and achieving higher score indicates stronger behavioral control of PA.

Intention was measured by two questions

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(alpha coefficient = 0.76); for example, "I planned to participate in physical activity for at least 30 minutes each day, 5 days a week in the forthcoming month". It was measured through a 7-choice scale, from (1: strongly disagree) to (7: strongly agree), in which a higher score indicated a stronger intention to participation in PA.

Third: PA was assessed by an adapted short version (continuous score) of the International Physical Activity Questionnaire (IPAQ), which provided information on the time spent on walking (as exercise), vigorous and moderate-intensity activity [23].

Correlation test and stepwise regression analysis were used to evaluate important factors effective on prediction of individuals' behavioral intention and PA behavior.

Finally, the collected data were analyzed through SPSS 21. The statistical bivariate correlation test and stepwise regression test were employed at the significance level of 0.05.

It is to be noted that the research subjects were justified in terms of plan design, information privacy, and purpose of the research; all of them had participated in the research voluntarily. The Ethics Committee of Tarbiat Modares University approved this study.

Findings

Most of the participants (98%) were in ages above 30, and 84% of them had academic education. In terms of occupational situation, most of them were formal employees. Also 66% of them had one or two children. According to the respondents' body mass index (BMI), 40% of them had over-weight, and 15% were considered as fat people; since based on BMI, adults are divided into 3 groups; healthy (18.5-25), overweight [25-30], and fat (over 30) groups. Therefore, about 55% of the research population was overweighed or fat. Just 28% of the participants had regular physical activity, while about 72% of them had not enough activity (Table 1).

As observed in Table 2, there is a positive and significant relation between the score of behavioral intention with the scores of attitude and perceived behavioral control, while it has no relation with subjective norms.

Stepwise regression analysis was used to evaluate important factors effective on prediction of behavioral intention. In this way, behavioral intention was considered as constant variable, and other variables (perceived behavioral control, attitude and subjective norms) were considered as predictors.

Based on the results of this test (Table 3), the variable of perceived behavioral control was entered the regression equation at first, so that it could determine 40% of intention variance alone (R^2= 0.408), the attitude had a little effect and the subjective norms had no effect in prediction of intention.

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Table 1: Demographic data of the research population

Variable	Features	Number (%)
Age	20-30 years	2(2)
	30-40 years	57(60)
	40-5- years	29(30)
	50 years and more	7(8)
Marital status	Married	63(66)
	Single	32(34)
Number of children	0	19(30)
	1	21 (33.3)
	2	21(33.3)
	3	2(3.4)
Type of employment	Formal	53(56)
	Contractual	42(44)
Education	High school	3(3)
	College	12(13)
	Diploma	13(14)
	License	42(44)
	MA	23(24)
	PhD	2(2)
Regular physical activity	Yes	27(28)
	No	68(72)
Body mass index (BMI)	Below 18.5	1(1)
	18.5-25	42(44)
	25-30	38(40)
	More than 30	14(15)

Table 2: Correlation between the variables effective on physical activity

Variable	Physical activity behavior	Behavioral intention	Attitude	Subjective norms	Perceived behavioral control
Physical activity behavior	R=1				
Behavioral intention	R=0.46 p=0.00**	R=1			
Attitude	R=0.10 p=0.326	R=0.22 p=0.02*	R=1		
Subjective norms	R=0.00 p=0.98	R=0.06 p=0.56	R=0.43 p=0.00**	R=1	
Perceived behavioral control	R=0.39 p=0.00**	R=0.62 p=0. 00**	R=0.12 p=0.22	R=0.10 p=0.29	R=1

*Significant level: 0.05, ** Significant level: 0.01

Table 3: Stepwise regression analysis for determining the effective variables on behavioral intention

Variable	Coefficient	SD	P-value
Constant	0.210	0.831	0.801
Perceived behavioral control	0.396	0.049	P< 0.001

R^2= 0.408

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Then stepwise regression analysis was used to evaluate important factors effective on prediction of behavior (Table 4). In this way, PA behavior was considered as constant variable, and other variables were considered as predictors. In the first step, intention was entered the regression model, so that these variables alone could explain 22% of variance in PA behavior (R^2=0.219).

Table 4: Stepwise regression analysis for determining the effective variables on physical activity behaviour

Variable	Coefficient	SD	P-value
Constant	160.544	73.478	0.801
behavioral intention	50.196	9.823	P< 0.001

R^2= 0.219

Discussion

As mentioned in the findings, perceived behavioral control had the greatest effect on behavioral intention, and intention had the greatest effect on behavior. Attitude toward behavior had little impact, and subjective norms had no significant effect on intention and behavior.

Identification of factors predicting people's participation in PA programs can be helpful for more systematic planning of authorities and experts in the field. Here, the effect of factors such as attitude toward behavior, subjective norms and perceived behavioral control on people's behavioral intention was studied using the TPB.

In a research conducted by Emdadi et al. (2007) with participation of just female students, the ratio of active people was 26.9% [26]. The results of a research conducted by Dastjerdi et al. (2003) titled 'process of decision making for physical activity of high school girls' showed that 58.6% of the students were in the levels of pre-intention and intention, and 24.7% were in the level of action and maintenance [27]; this is a little less than the percent of active people in this research.

According to the results of a cross-sectional study conducted by Charkhgari and Teimuri (2005), 31% of Iranian women were in the level of exercise and maintenance [28]. This difference of results can be due to the difference of research population or research environment; this confirms insufficient exercise among employees compared to other women of the society.

in a study conducted by Mok and Lee (2013) among high school students in Hong Kong, perceived behavioral control and subjective norms had the most impact on prediction of behavioral intention, respectively; attitude showed an insignificant impact [29]. These results are somehow similar to those of the

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current study. Since the mentioned study was conducted among high school students, and due to their differences with respect to the participants of this study, as well as the influence of family and close relatives, particularly teachers (subjective norm) on behavioral intention, this can be justified.

Perceived behavioral control is an individual's perception of function control that is very close to Bandura's self-efficiency theory. It is accepted that structures of both self-efficiency and perceived behavioral control would strengthen intention and maintain behavior because an individual will attempt more to perform applicable and controllable behaviors [30].

A meta-analysis perfumed by Nigg and Biddle (2000) showed that though intention has great impact on sport behaviors, attitude has a great impact on people's intention performing sport activities. The other finding was that perceived behavioral control predicts intention in several age groups; especially with increase of age, perceived behavioral control and subjective norms get more important than attitude [31].

The study of Martin et al. (2007) about prediction of PA in children showed that attitude, subjective norms and perceived behavioral control in total explain 45% of variance for intention [32], which is somehow different with the current study, because in this study, subjective norms as predictors have not been affected.

Also the study of Armitage (2005) showed positive role of perceived behavioral control in doing PA [33]. Similarly, the results of current research imply that improvement of perceived behavioral control would increase people's intention doing PA. Also these people are in higher levels of behavior; this confirms that self-efficiency and perceived behavioral control are mostly overlapped. As mentioned before, perceived behavioral control is a main factor to predict intention while self-efficiency is the most important factor to predict behavior [30].

Several studies support the idea that perceived behavioral control can have a structure similar to self-efficiency. In other words, structures of perceived behavioral control and self-efficiency are overlapped conceptually [34]. A recent research conducted by Dixon et al. (2005) revealed that it is not possible to differentiate two structures of perceived behavioral control and self-efficiency even utilizing the most up-to-date tools [35]. In line with Bandura's theory, perceived self-efficiency can be considered as necessary pre-requisite to perform behavior. Self-efficient people have positive beliefs about their abilities to perform desired behavior and/or they can even renovate their behavior after a short pause. Therefore, these people transform their intention to action more possibly [34].

Accordingly, increase in people's perceived control and also increase in self-efficiency can

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lead to increase of their participation in physical activities. Since perceived behavioral control depends on existence or lack of facilitators or barriers performing a behavior, thus we must consider these facilitators and barriers in the community under consideration. Research showed that one of the factors to determine PA is barriers to perform these behaviors [36], and abilities, in contrast, have positive and meaningful relation with increase of PA [37]. In addition, PA has a direct relation with having appropriate places for sports, equipment and providing vehicle to go to a training or exercise program [38]. People are encouraged to do PA alike healthy behaviors when they feel having control on that behavior [39].

Handerson et al. (1988) suggested that lack of time, lack of interest, and lack of equipment and capital are among the barriers preventing women's presence in recreational and physical activities [40].

In the study of factors preventing women's participation in physical activities, Searle and Jackson et al. found that women are facing with more barriers of participation on PA than men. They express reasons of absence of women in physical activities as: having no attendant for physical activities, family commitments, lack of information, shyness, lack of vehicle, and physical disability [20].

Henderson et al. showed that one of the causes that retard exercise is insufficient information to individuals because they are unaware of provided services and the existence of services for sport activities [40]. Also Rhodes and Dickau (2013) in the study of 'factors moderating intention and behavior of physical activity' indicated that perceived behavioral control, self-efficiency, planning, objectivism, and closeness to place of recreation can be considered as facilitators between intention and physical activity behavior [41].

Conclusions

According to this study, just 28% of women employees have regular PA, while about 72% of them have not enough activity. Level of PA as key determinant of healthy life-style is less than what is required in individuals, particularly in women. Applying theories of behavioral change about complex behaviors such as physical activity leads to identify effective factors and their relations.

According to the findings, constructs like perceived behavioral control could be effective in behavioral intention and PA behavior. Since perceived behavioral control is adjusted by providing incentives and removing the obstacles; therefore, educational programs must focus on these factors.

Acknowledgments

The present study was part of a doctoral

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dissertation in Health Education and Health Promotion that was supported by the Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran. It was conducted among the office workers in the University of Tehran. We would like to express our gratitude to the employees of both Universities for their effective cooperation.

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