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Effect of Educational Program Based on the Theory of Planned Behavior in Physical Activity Continuation of Female Employees

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Abstract: Now a days, mothers have ceased to breastfeed due to several factors and resort to bottle-feeding or other forms of complementary feeding for their children. This results in physical and emotional problems for children and socio-economic harms in communities. Reduction of physical activity among adolescents one is the most important problems of society. Regular physical activity has been established as a mechanism to prevent and treat various chronic illnesses such as heart disease, diabetes, cancer, obesity, osteoporosis and psychological ailments. Physical activity during childhood and adolescence is crucial as it contributes to a normal skeletal development and is necessary for young adults to attain and maintain an appropriate bone mass. Moreover, teenager's physical activity has been consistently associated with higher levels of self-esteem and lower levels of anxiety, stress and gain psychological health. The purpose of this study is to investigate effect of educational program based on the theory of planned behavior in physical activity continuation of female employees. The current research is an interactive- semi empirical study that was conducted in format of pre and post-test on 95 woman employees of Tehran University, 2014.

Key words: Educational program, planned behavior, physical activity, employees, educationa

INTRODUCTION

Level of physical activity as key determinant of healthy lifestyle is less than what is required in individuals particularly women. Applying theories of behavioral change about complex behaviors such as physical activity leads to identify effective factors and their relations (Gholamnia *et al*., 2014).

According to World Health Organization, inadequate physical activity ranked the fourth leading cause of global mortality (World Health Organization, 2010). Mortality rates for heart disease and cancer are falling, due to better and earlier treatment, but morbidity rates continue to rise as do risk factors such as obesity, diabetes and hypertension. The causes of this increased morbidity are predominantly unhealthy lifestyles: smoking, unhealthy diets and physical inactivity. There is now convincing evidence that people who are physically active live longer and have lower morbidity (Allender *et al*., 2008).

Health benefits of physical activity according to the 2008 Physical Activity Guidelines are: Lower risk of the early death, heart disease, stroke, Type 2 diabetes, high blood pressure, adverse blood lipid profile, metabolic syndrome and colon and breast cancers. Prevention of weight gain, weight loss when combined with diet, improved cardio respiratory and muscular fitness, prevention of falls, reduced depression, better cognitive function (older adults), better functional health (older adults), reduced abdominal obesity, weight maintenance after weight loss, lower risk of hip fracture, increased bone density, improved sleep quality, lower risk of lung and endometrial cancers.

The current England and United States governmental guidelines are for adults to accumulate at least 30 min of moderate or vigorous physical activity on at least 5 days in every week. However, 60% of males and 70% of females in England do not reach this level of physical activity required to benefit their health (Darker *et al*., 2010). Another study in Iran showed that only 6% of female nurses reported regular exercise at the required levels. Also there are some cultural barriers to Iranian women exercising in public places. There are few woman-only fitness centers which few can afford and there is an expectation that women will prioritize household

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responsibilities. There is a need for research to establish effective ways of helping older women to develop healthy and sustainable exercise habits (Shirazi *et al*., 2007).

Moreover, a reduction in the manufacturing industry and a rise in more sedentary jobs such as those in the service industry across the western world means that individuals are sedentary for a large proportion of the day; a risk factor for chronic disease (Hamilton *et al*., 2007). The workplace is a useful setting in which to promote physical activity (either by encouraging physical activity during the working day or in leisure time), since most adults spend half their waking hours at work. Moreover, the potential economic benefits to an organization such as reduced absenteeism, increased productivity, increased stress tolerance and improved decision-making as well as the physical and mental health benefits for employees, means that there is a strong business case for using the workplace as a vehicle for health promotion efforts of this kind.

When you create a comprehensive wellness program that includes a physical activity component for your employees, you may see a return on investment financially as well as a potential reduction of employee absenteeism, disability claims and workers' compensation costs. Adults who meet the recommended amounts of physical activity gain health benefits.

Fishbein and Cappella (2006) suggested that application of behavioral theories could help to generate effective health intervention programs and design persuasive communication. TPB is a model generated from the Theory of Reasoned Action (TRA) (Ajzen, 2011) which assumes that the specific behavior is determined by intention to perform it (Fishbein and Ajzen, 2011). The model extended the TRA by supplementing the Perceived Behavioral Control (PBC) because TRA experiences difficulty in explaining behaviors in which a person does not have volitional control over it. Armitage and Conner (2001) made an excellent review on TPB. Basically, there are three antecedents of behavioral intention which are attitude, subjective norm and PBC (Mok and Lee, 2013).

There are several reasons why the TPB is a promising theory on which to base interventions to alter health-related behavior. First, it can be used to predict and explain any behavior in terms of a few constructs. Second, it has been frequently used to study a variety of health behaviors and is probably the social cognition model that is most commonly used in health psychology. Third, meta-analytic reviews of the TPB have provided empirical support in terms of its capacity to predict many health behaviors. The TPB has also been successfully used several times to predict walking behavior. Theory of planned behavior studies have identified Perceived Behavioral Control (PBC) as the key determinant of walking intentions (Darker *et al*., 2010).

Studies show that level of physical activity decreases during life, but is not a linear process. One of the most prominent declines of participation in physical activity occurs in adulthood (25-44 year). Several levels of life, for example education, employment or marriage emerge as possible reasons for significant decline in physical activity (Kirk and Rhodes, 2012; Allender *et al*., 2008).

Employees spend most of their time in work place and it is not possible to exercise physical activities in most work places. Therefore, it is necessary to provide required fields for more and active presence of employees, especially women in sports arena. In this regard, available problems must be identified and by removing them, we would improve level of sports for women. Besides conflict against inactivity and also doing proper physical activity and suitable nutrition as one of the pillars of healthy lifestyle, simple and joyful actions such as walking to work or shop store, cycling, using stairs instead of elevator (at least when coming down), doing simple stretching exercises when sitting behind the desk, talking on the phone and watching TV could be performed. This study tries to use available opportunities for physical activities by presenting necessary training to employees.

Women employees have the least physical activity in work place and practically there is no time for this type of activities due to lengthy working hours and too much tine of going to work and vice versa. Therefore, one of the important tasks of health team is to present strategies and training for more efficient use of time, doing sport activities at home and work place and enjoying more from physical and mental advantages of sports. in the current research, we tried to do an intervention for improvement and continuity of physical activity in women employees based on 'programmed behavior theory' since in most of cases, some interventions are performed to increase physical activity in different communities but unfortunately these activities last not and are forgotten after a while.

MATERIALS AND METHODS

The current research is an interactive-semi empirical study that was conducted in format of pre and post-test on 95 woman employees of Tehran University, 2014. Purpose of this study is to investigate impact of

curriculum on programmed behavior theory and improvement and continuity of regular physical activity among woman employees of Tehran University.

Thus, sample size included 80 employees that were selected due to results of previous studies, use of Puckak method for comparison of ratios and considering 10% of sample cut. There were more than 110 persons registered for the request performed by administrative automation. Being employee and physical ability to perform sport activities were two criteria for entering study. Finally, 95 woman employees in Tehran University were selected for this research (Nikpour *et al*., 2006).

The reason of choosing women for this study was that they have more difficulties for participation in sport activities. The reasons for women disaffiliation in sport activities include having no attendant for physical activities, family commitments, lack of information, shyness, lack of vehicle and physical disability. In Iran, social and cultural barriers are among important factors that have deep impact on decrease of Iranian women presence in sports. 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 and are among socio-cultural factors effective in this field (Searle and Jackson, 1985; Mirghaffouri *et al*., 2009). It must be noted that 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.

Data collection tools: In this research, data collections tools includes three parts in which information are collected from respondents by self-report. Demographic information: this part includes 8 questions about personal information which studied 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.

Here, the questions were about model structures: the structures of programmed behavior model were designed based on similar studies and Likert questionnaires with 7 ratings scale response for questions of attitude, abstract norms, perceived behavioral control and behavioral intention. Evaluation and confirmation of structure and content reliability was performed by use of expert team ideas of the field. also, an initial study was conducted on 30 university employees due to measurement reliability of questionnaires in this level; applying Cronbach's alpha test, reliability of questionnaires were confirmed as below (Armitage, 2005; Courneya and Bobick, 2000). 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 (usefulness) to (useful) and achieving higher score indicates stronger attitude towards having physical activity.

Subjective norms include 3 questions (alpha coefficient = 0.77); for example, 'idea of people important for me is that I should exercise regularly' with a 7 scale rating from (disagree) to (agree) and achieving higher score of the subjective norms encourages stronger physical activity.

Perceived Behavioral Control (PBC) was also measured with 4 questions (alpha coefficient = 0.89); for example, 'to what extent you are allowed for regular physical activity' was measured with a 7 scale rating from (uncontrollable) to (completely under control) and achieving higher score indicates stronger behavioral control about physical activity.

This level was subject to International Physical Activity Questionnaire (IPAQ); it asks some questions about severe and mild physical activity and walking during last week. In 1998, this questionnaire was suggested by World Health Organization (WHO) and Centers for Disease Control (CDC) for 15-69 year age group and validity and reliability are confirmed in several studies (Deng *et al*., 2008; Ekelund *et al*., 2006; Hagstromer *et al*., 2006; Martinez-Gonzalez *et al*., 2005; Gholamnia *et al*., 2014). The questionnaire measures physical activity of 7 last days and severity of activities is determined due to final score. Activities such as aerobics, cycling with high speed, mountaineering, basketball and that need >6 calories per minute are called 'severe physical activity' and activities such as cleaning the room, badminton, volleyball and that need 3-6 calories per minute are called 'mild physical activity also, any activity >10 min would be removed.

Calculation of energy severity for total activities during 7 last days is performed due to IPAQ questionnaire and if total calculated energy during week is <600, 600-3000 and >3000 met/cal/week, then physical activity will be classified as weak, mild and severe, respectively. Finally, information was analyzed by SPSS 21 statistical Software, repeated measure tests and t-test with 5% of significance level.

At first level, education intervention was held for test group in person for 2 week (4 sessions of 90 min) due to information gathered and theoretical structures of programmed behavior. Training sessions were in format of lecturing, work group, brainstorming and problem solving. Thus, some barriers of participation in physical activity were introduced in this session and solutions were presented by respondents through work group and brainstorming.

Training sessions included items below:

- Session 1: Introduction of curriculum goals, attention to curriculums and role of physical activities on physical and mental health
- Session 2: Emphasize on attitude structure, effects of physical inactivity on mental, physical and social status of people and also diseases caused by inactivity
- Session 3: Emphasize on structure of perceived behavioral control, how to overcome physical activity barriers and amount of physical activity in several periods of life
- Session 4: Emphasize on structure of behavioral intention, impact of sports on health and advantages of sport activities

Then, training messages were sent for them semimonthly and for 3 months through administrative automation system. At the end of this period, the questionnaire was completed again; this continued till next 6 month. After that, the questionnaire was again completed by respondents and information was analyzed.

RESULTS AND DISCUSSION

According to respondent's Body Mass Index (BMI), 40% of them had over-weight and 15% are considered ad fat people; since based on BMI, adults are divided to 3 healthy(18.5-25), overweight (25-30) and fat (over 30) groups (Colley *et al*., 2011). Therefore, about 55% of research population was overweighed or fat which could be effects of not enough activity itself. Also, about 72% of population had not regular physical. Some demographic data of research are mentioned in Table 1.

Table 1 demographic data of research population

Results of variance analysis test, repeated measurements of attitude structures, subjective norms, perceived behavioral control, behavioral intention and physical activity behavior are shown in Table 2 research findings show that variable of 'attitude' was statistically significant in three levels of pre-test, first and second post-test in control group and repeated measurement test ($p<0.05$). Analysis of the test in intervention group showed that mean differences was not significant statistically ($p = 0.239$) results of 'subjective norms' variable in 3 levels of pre-test, first and second post test showed that analysis of repeated measurement test has increased in intervention group but was not significant statistically ($p = 0.540$); also, analysis of repeated measurement test of control group showed that mean differences was not significant statistically ($p = 0.693$). Results of the research show that 'perceived behavioral control' variable was statistically significant in three pre-test, first and second post-test levels of intervention group in repeated measurement test ($p<0.05$); analysis of this test in control group showed that mean differences were not significant in three levels of test statistically ($p = 0.974$).

Table 1: Demographic data of research population

	Control group		Test group		
Variables	Mean	SD	Mean	SD	p-value
Age	40.94	6.778	39.04	7.227	0.192
Education level	3.88	1.206	3.71	0.991	0.456
Working experience	16.20	6.240	14.47	5.079	0.139
BMI	25.54	3.477	25.51	3.307	0.967

As shown in Table 2, increase of 'behavioral intention' variable in three levels of pre-test, first and second post-test of intervention group was statistically significant ($p<0.05$); analysis of this test in control group showed that mean differences were not significant in three levels of test statistically ($p = 0.455$).

Behavior of participants in intervention group including all physical activities based on repeated measurement test showed a significant increase ($p<0.05$) while the same test in control group showed that mean differences in three levels of test were not significant ($p= 0.258$). Walking duration has increased significantly in three levels of test of intervention group ($p<0.05$) while this variable had not a significant change in control group ($p = 0.257$).

As mentioned before, purpose of this study is to investigate impact of curriculum on programmed behavior theory and improvement and continuity of regular physical activity among woman employees of Tehran University. According to results, it is observed that intervention caused meaningful increase in most structures of programmed behavior theory, specifically participants' physical activity behavior. The results of attitude score imply its significant increase in intervention group towards doing physical activity after termination of curriculum. These changes could be a good indicator of curriculum efficiency for positive attitude improvement of participants doing physical activity that matches with similar studies of the field (Solhi *et al*., 2012; Matthys and Lantzl, 1998). Personal attitude towards physical activity affects people's function and participation about physical activity. In this regard, literature review shows that personal attitude improvement, social effects and people's self-efficacy to this issue increase their participation in physical activity (Jones *et al*., 2009; Im *et al*., 2010). Though some studies reported no significant change after curriculum presentation but this could be related to other demographic factors of sample size such as age, education level and their cultural doctrine

Table 2: Comparison of mean and SD of programmed behavior theory between two groups

	Before int.3 month		After Int.6 month		After Int.3 month		
Variable/group	Mean	SD	Mean	SD	Mean	SD	p-value
Attitude							
Case	41.260	7.120	43.640	6.05	43.52	4.88	0.017
Control	39.490	7.120	39.310	8.86	37.76	9.31	0.239
p-value	0.148	0.007	0.000				
Subjective norms							
Case	18.120	3.780	18.300	3.37	18.68	2.35	0.540
Control	17.800	3.720	18.200	3.62	18.09	2.26	0.693
p-value	0.465	0.890	0.215				
Perceived behavioral control							
Case	15.520	6.500	18.400	5.95	19.04	4.02	0.000
Control	15.580	6.270	15.440	6.14	15.58	5.33	0.974
p-value	0.849	0.020	0.001				
Intention							
Case	6.540	3.960	8.600	3.79	9.18	2.15	0.000
Control	6.180	3.950	6.800	4.32	6.73	2.70	0.455
p-value	0.653	0.035	0.000				
Physical Activity (MET)							
Case	513.960	410.050	624.420	359.94	654.14	267.87	0.002
Control	461.720	439.570	419.960	354.03	386.93	210.20	0.258
p-value	0.502	0.006	0.000				
Walking Time (minutes)							
Case	101.200	70.900	131.400	70.15	131.80	42.44	0.000
Control	88.330	69.000	81.200	56.64	72.00	32.69	0.257
p-value	0.373	0.000	0.000				

(Parrott *et al*., 2008; Rogger *et al*., 2002). Biddle and Smith studied about relation between attitude and following the exercise program. They reviewed three studies which had tested TRA and TPB; then, they concluded that programmed behavior theory is capable of explaining meaningful values of variance in physical activity intention. This study showed that theoretical models could be used for measurement in small scales and also public health research (Andrew and Buddle, 1999).

Subjective norms of this study had not increased significantly; thus, we cannot imagine an effective role for participants' physical activity improvement. Some studies showed that subjective norms have a weak role in TPB model for prediction of adults' behavioral intention (Hagger *et al*., 2001). Also in another study, it was shown that importance of subjective norms in behavioral intention might decrease with increase in age. In youth who are under influence of their peers or control of their parents, subjective norms are strong predictor of sport behavior (Godin and Shephard, 1986). In a study conducted by Lee and Mok among high school students in Hong Kong, perceived behavioral control and subjective norms had the most impact on prediction of behavioral intention, respectively (Mok and Lee, 2013); attitude showed an insignificant impact .These results are somehow similar to current study and it could be explainable since mentioned study was conducted on high school students and there is a difference between their age and that of current study. Results of current study reveal increase of presided behavioral control in test group and its positive effect on doing physical activity after termination of curriculum. This issue was completely consistent with findings of Blanchard et al that enumerated attitude and PBC as the most effective p redictors of sport intention (Blnchard *et al*., 2002). Thus, it seems that curriculums could be useful for physical activity improvement between employees and improving their perceived behavioral control.

As mentioned above, this training intervention causes increase in behavioral intention and also behavior (physical activity) scores. Behavioral intentions are observed as a key component in most social-cognitive models. Intentions are the most important predictors of behavior but are not solely enough for behavior performance. They are less successful to change habitual lifestyle and therefore, concept of behavioral intentions is not solely enough to perceive changes of lifestyle (Sniehotta *et al*., 2005).

There is a possibility that people have not enough control on their desired behavior. In studies of programmed behavior theory, it is not generally possible for researchers to determine extent of participants' real control on their behavior. Thus, researchers had cited on structure of perceived behavioral control expressing that control perception is logical reflection of real control. The evidence is unclear whether perceived behavioral control can balance the distance and relation between intention behavior or not. The brief article of Sheeran indicated that intention in 82107 sample sizes could be responsive just for about 28% of behavior variance (Sheeran, 2002). Transforming an intention to act is a major challenge that is considered recently; this issue is called 'intention

behavior gap' (Sutton, 2008). In study of factors mediating intention and behavior of physical activity, Rhodes and Dickau showed that percives behavioral contraol, self-efgficacy, programming,objectivism, habit and envirmental proximity to entertainment places can be facilitators between intention and behavior of ohysical activity (Rhodes and Dickau, 2012). Searle and Jackson (1985) in their study about barriers of women participation in sport activities showed that women face with more barrires than men. They expressed reasons of woman lack of participation in sport excersies such as having no attendant for physical activities, family commitments, lack of information, shyness, lack of vehicle and physical disability. As mentioned before, PBC is the most effective predictor of sport intention.

CONCLUSION

Increase in perceived control of people's behavior and also increase I their self-efficacy can lead to increase of their participation in physical activities. since PBC depends on existence or lack of facilitator or barriers performing a behavior or perceived ability, thus we must study these facilitators and barriers in the target population performing an intention increases possibility of showing a behavior and its start pace both; interventions must improve specific programming and also increase intention and perceived behavioral control (Kelley and Abraham, 2004).

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