

Application of Transtheoretical Model to Exercise in Office Staff

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Abstract:

Background: Transtheoretical model is identified as a comprehensive model for behavior exercise. The aim of this study was to check the situation of stage of change in exercise behavior of office personnel of Yazd city using transtheoretical model.

Methods: In a cross-sectional study, 220 office personnel selected from administrative offices of Yazd through two-stage cluster-sampling method. The instrument for data collection was a questionnaire that included demographic variables and constructs of transtheoretical model. The reliability and validity of the instruments were examined and approved by experts. The data was analyzed using SPSS soft ware.

Results: 152 males (69.1%) and 68 females (30.9%) with an average age of 34±8.68 years were selected. Sixty percent of the subjects were in precontemplation and contemplation stages and only 7.3% were in action stages. Significant differences were found between TTM constructs and stages of change (P=0.000). The results also showed significant differences between components of decisional balance and behavioral process and cognitive process with the stages of change. We found that behavioral process of change and self efficacy were the most important variables for improving levels of exercise.

Conclusion: Most of the participants were in the precontemplation and contemplation stages and most problems were related to behavioral process and self efficacy. Therefore, strategies and programs are needed to be taken into account to improve exercise among the staff.

Keywords: Transtheoretical Model; Exercise; Office staff, Yazd

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1. Introduction

It has been well documented that exercise is an effective health behavior that not only prevents various health problems, but also promotes healthy lifestyles (1). In addition, in many areas, the physical and psychological benefits from regular physical activity in reduction of mortality and morbidity in both general and clinical populations are sufficient justification for the inclusion of exercise in healthcare programs (2). The U.S. Surgeon General's report on physical activity reduces the risk not only of premature mortality, but regular physical activity is also important for mental health and overall quality of life (3) In spite of important health benefits brought about by physical activity, many people are not sufficiently active in their daily lives in order to benefit their health (4, 5). Physical activity is estimated to cause 1.9 million deaths globally and more than 60% of adults do not engage in sufficient levels of physical activity which are beneficial to their health (4). Findings from a national survey among Iranian adults revealed more than 80% sedentariness and 44.4% lack of exercise in their free time (5, 6).

To improve our limited understanding of physical activity behavior, health professionals have been encouraged to examine the exercise behavior of individuals using contemporary psychosocial theories (7). One of the most promising of these theories is the transtheoretical Model (TTM) of behavior change (8). The TTM postulates that people change behavior cyclically in five stages that integrate current behavior with their intention to maintain or change behavior. The five stages of motivational readiness to change physical activity behavior are as follows:

- Precontemplation includes those not participating in regular physical activity and not intending to change in the next 6 months.
- Contemplation includes those not participating in regular physical activity but intending to do so in the next 6 months.
- Preparation includes those not participating in regular physical activity but actively making small changes to do so.
- Action includes those who have actively engaged in regular physical activity for less than 6 months.
- Maintenance includes those who have actively engaged in regular physical activity for 6 months or more (9).

The TTM integrates behavior change constructs with the core construct of stages of change. These constructs include self-efficacy (a person's confidence to participate in a specific behavior in the midst of difficult situations), decisional balance (the pros and cons of changing), and 10 processes of behavior change classified as experiential processes of change and behavioral processes of change (10). However, most of the previous studies have been conducted in western countries. Therefore, it is imperative to determine the external validity of those research findings before adopting findings across nations and cultures (11). So this study was designed and carried out with the aim of examining the applicability of Transtheoretical Model (TTM) on exercise among office staff of Yazd City.

2. Material and Methods

A total of 220 offices employees with mean age of 34 ± 8.68 years were selected from all the administrative offices in Yazd city. This was a cross-sectional and analytical-descriptive study. Regarding the regression analysis, 10 samples were taken per variable (12). Considering 22 variables, a total of 220 official personnel were selected from all the administrative offices in Yazd. The subjects were selected through 2-stage cluster-sampling. Initially, after listing all of the offices, 8 were randomly selected and 30 employees from each office were included in the study.

The study was quantitative analytical with data gathered through standardized self-report questionnaires. Validity of the questionnaire was acceptance with content validity and reliability of the method of implementation pilot projects and calculated with Alpha Cronbach ($\text{Alpha}=0.81$). These questionnaires examined the exercise behavior of offices employees and the TTM constructs relating to exercise behavior. A five-page questionnaire was designed and consisted of four instruments. The instruments were labeled as specific sections (part 1-5). The first survey instrument was designed to collect information on 1) basic demographics 2) stages of change 3) self efficacy 4) decisional balance 5) process of change. In order to measure exercise behavior, the Stage of Exercise Behavior Change Questionnaire was developed and modified by Marcus et al (13). In this questionnaire, stage of exercise behavior change was assessed using 5-item, dichotomous scale (“yes”/“no”) related to regular exercise behavior and intentions. Regular exercise was defined as exercising 3days (preferably all) of the week for at least 20 min each time. Self-efficacy for exercise was measured using a four-item instrument developed by Bandura (14) Participants responded by using a five point Likert scale of not at all confident until always true.

Decisional balance (pro& con scores) was measured using a 43-item inventory developed by Sechrits (15) that evaluated the perceived pros and cons to exercise behavior. Participants were asked to evaluate each statement based on their own circumstances, using a four point Likert scale of strongly agree until strongly disagree. To assess the participants' behavioral/cognitive activities relating to exercise behavior change, questionnaire developed by Nigg was used in this study (16). Regarding ethics, purpose and nature of research were explained to all of the employees under study and all processes were served with formal permission of the officials.

3. Results

In this study 152 males (69.1%) and 68 females (30.9%) with an average age of 34 ± 8.68 years were selected. According to the results, 20% of the subjects were in precontemplation stage, 40% in contemplation stage, 13.6% in preparation stage, 7.3% in action stage and 19.6% of the subject were in maintenance stage. According to results this

study, all constructs of model had significant correlation with the behavioral change stages. Correlation coefficient for constructs of model was self efficacy $r=0.40$, cognitive processes of change $r=0.44$, behavioral processes of change $r=0.55$, $r =$ perceived benefits $r=0.32$, for perceived barriers $r=0.31$, and between this behavioral processes of change (Table1).

Table 1. Coefficient relation matrices of parts of the Transtheoretical Model

	Stages of change	Self efficacy	Cognitive Process of change	Behavioral Process of change	pros	cons
Stages of change	1					
Self efficacy	0.403	1				
Cognitive Process of change	0.444	0.449	1			
Behavioral Process of change	0.558	0.461	0.641	1		
Pros	0.326	0.477	0.477	0.484	1	
Cons	-0.331	-0.261	-0.231	-0.270	-0.365	1

Table2. Comparison of mean and standard deviation self efficacy and decisional balance and processes of change according to age

Indicators	Age								
	20-30		30-40		40+		Total		ANOVA
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Self efficacy	2.89	0.50	3.00	0.47	2.97	0.57	2.97	0.51	0.080
decisional balance	1.06	0.47	0.91	0.46	1.27	0.53	1.06	0.50	0.000
Pros	3.26	0.33	3.18	0.32	3.38	0.30	3.26	0.32	0.004
Cons	2.18	0.29	2.24	0.29	2.12	0.30	2.19	0.29	0.066
Process of change	2.95	0.35	2.96	0.37	3.10	0.42	2.99	0.38	0.054
Cognitive Process of change	3.03	0.34	3.04	0.38	3.21	0.37	3.08	0.37	0.010
Behavioral Process of change	2.83	0.47	2.89	0.45	3.00	0.54	2.89	0.49	.126

The results on the relationship between sex and stage of change showed that in maintenance phase, only 23 percent of men and 9.3 percent were women. According to the results of this study, older individuals were more in the maintenance stage as compared to younger individuals, as amount of physical activity increases with increase in age. Also, it was higher self efficacy, processes of change and decision balance increased in people with higher age (Table2).

The relationship between education and stage of change was significant ($p=0.001$) and with progress the stages from precontemplation until maintenance decreased in uneducated. This study on the relationship between educational level and self efficacy showed that people with higher education level had higher mean score than people with lower education. There was a statistically significant relationship between education and self efficacy ($p=0.000$). There was a significant relationship between income and concepts of TTM (self efficacy, processes of change (cognitive and behavioral process and stages of change) as among higher income people, 30.4 percent were in maintenance stages, while in lower-income people only 11.1 percent were in maintenance stage.

Regarding amount of working hours per week and its relation to stages of change, this research proved that 23.5 percent of people who worked less than 35 hours per week were in maintenance stage, while 18 percent of those who worked more than 35 hours per week were in maintenance stage. All structures (self efficacy, behavior change processes, cognitive processes of change and perceived benefits) had significant positive relationship with preparation for exercise, and so with progress people in stages of change increased all structures of TTM (except cons) (Table 3).

Table 3. Comparison of mean and standard deviation self efficacy and decisional balance (pro and cons) and processes of change (behavioral and cognitive process) according to stage of change

Stages of Change	Indicators									
	Self efficacy		Behavioral process of change		Cognitive process of change		Pros		cons	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pre contemplation	2.86	0.61	2.56	0.47	2.86	0.37	3.16	0.33	2.28	0.27
Contemplation	2.87	0.39	2.75	0.40	3.00	0.32	3.20	0.31	2.26	0.25
Preparation	3.16	0.47	3.03	0.40	3.17	0.34	3.27	0.32	3.13	0.22
Action	3.13	0.55	3.11	0.40	3.17	0.34	3.31	0.36	2.17	0.24
Maintenance	3.29	0.43	3.35	0.35	3.37	0.33	3.48	0.30	2	0.37
ANOVA	0.000		0.000		0.000		0.000		0.000	
POST HOC	PC<P,A,M		PC<P,A,M		PC<P,A,M		CP<A,M		M<PC,CP	

4. Discussion

Development of mechanical life leads to immobility and increases discomforts and diseases. Exercise is considered as a factor that can compensate this problem (17). The government employees sitting behind the desk are relatively immobile and suffer from numerous diseases and problems like debility, obesity, and lethargy in mind, thought and daily affair. Certainly, exercise activities can be factors affecting this area.

The results of this study showed that the majority of people (more than half) were in precotemplation and contemplation stages and minority of people were in action stage but in a study by Nigg et al. the majority of participants were in action stages (18). Also in Kim et al study in South Korea, most of the participants were in maintenance stage (19). This contradiction can be due to the influence of seasonality on physical activities. As the level and motivation to engage in physical activities tends to increase in spring and summer (20), and the present study was undertaken in spring, the prevalence of individuals who initiated physical activities or who intended to do so may be overestimated. And the other reason that the comparison of the finding is sometimes difficult is the reason that concept of the stages, assessment formats and definition of PA significantly varies between studies (21). The relationship between sex and exercise was observed as in this study. Women were more than men in precontemplation and contemplation stages, while in the maintenance stage; women were less as compared to men. This result is in line with findings and matches with Laforg and Kim studies (19, 22).

According to the results of this study, older individuals were more in the maintenance stage as compared to younger individuals, while studies by Kerneay (23) showed that people with higher age were in contemplation stage. In this regard, Wong and colleagues (24) showed that there is increase in inactivity rate with increasing age. But other studies like the Gupta study have shown that women and men who are concerned about the effects of old age participate in weight loss programs more than the other people (25). Results of this study prove that there were significant relationships between income and variables like self efficacy processes of change (cognitive and behavioral process). Results of this study confirmed results of Boutle and colleagues in their study (26).

The results of this study showed that most people who spent time work during the week had opportunities for participation in sports, but it is likely that they did not have a desire to exercise because of daily fatigue. On the other hand, belief that the public actually working is considered the exercise can be effective in this situation. This study showed that in people with higher income, 30.4 percent were in maintenance stage, while lower income people, only 11.1 percent were in maintenance stage. Boutle and colleagues showed the same result that the amount of physical activity in individual with higher social economic status was more than people with higher income were in maintenance stage (26).

This study showed the relationship between education and stage of change as more people with higher education were in action and maintenance stages. These results match with other studies by Dumith and Wood (27, 28). One probable reason for higher self efficacy in higher educated people is that education enhances the level of thinking and people are more familiar with pros and cons of exercise, thus they increase efforts to exercise in order to enhance positive effects of exercise on their physical and mental health and decrease negative effects of exercise. Correlation analysis results between the concepts of TTM stages of change model correlation were significant (except cons). The findings of the study match those by Harry and Kim (19, 29). The study findings indicate that the TTM is useful in understanding the physical activity behavior of staff.

5. Conclusion

In sum, most of the participants in this study were in the precontemplation and contemplation stages. Most common problems were related to behavioral process and self efficacy. It seems we need to develop strategies and programs to increase exercise activities in office staff.

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Conflict of Interest:

There is no conflict of interest to be declared.

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