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Effectiveness of Interventional Program based on Trans-Theoretical Model to Promote Regular Physical Activity in children with hypertension and diabetes patients

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Abstract:

Background: *Despite importance of physical activity in health, welfare and quality of life, today most people do not have adequate physical activity. The aim of this study was to evaluate the effectiveness of interventional program based on trans-theoretical model to promote regular physical activity in the children with hypertension and diabetes patients.*

Materials and methods*: This was a pre and post-interventional study which The sample size of the survey about 90 children, sufferers of hypertension and diabetes Rural health centers Firuzabad formed and select the multistage sampling procedure, The first questionnaire, evaluation and demographic variables, structures and stages of change Model completed self-report method Then the*

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educational context is based on the theory described in the form of text, tract, pamphlet, booklet, written fabric banner, educational CD, slide and do physical activity are received. After 6 months, for taping evaluation questionnaires mentioned was completed. The data using descriptive statistics, SPSS18 software and t-test, Chi-square, correlation-the two and Whitney were analyzed.

***Findings**: the mean age of the subjects in the control group was 57/17±43/41 and experimental group 85.15 ± 65.41. Marital status in two statistically significant differences. Other demographic variables between the anthropometric indicators and statistical significant difference View failed. In before Stage 74.1% of the total of people prefer that walk after the intervention of other sports groups including swimming, climbing, gymnastic exercise with the device prefers. The results of the mean score stages of change, The average balance of decision-making structures and processes of change, self-efficacy, physical activity performed after the educational intervention in the test group had a significant statistical difference ($p<0.05$).*

***Conclusion:** According to the results, design and implementing of interventional programs based on behavioral change models could improve health-related behaviors.*

Key words: physical activity, hypertension, diabetes, non-communicable diseases, Trans-Theoretical Model

INTRODUCTION

Today, non-communicable diseases around the world, 43% of the burden of diseases make up (Rafati et al., 2008). Cardiovascular disease the most common cause of mortality in most countries of the world and the most important cause of disability (Azizi et al., 2010a). Reduced physical activity and indulged in consuming fats, meat, salt, sugar, and tobacco use is associated with stressful life in the past decade, the incidence of non-communicable diseases in human society. Nearly two-thirds of all deaths in developing countries are due to this disease. In Iran, as well as the diseases are the major cause of

death and disability in the process. Risk factors for the occurrence of this condition include low blood pressure, an increase in working, a lot of blood fats, glucose metabolism disorders, overweight, obesity and tobacco use in our country, and especially in the big cities it is common (Azizi et al., 2010b). One of the most effective strategies for reducing the risk of chronic non-communicable diseases, some include cardiovascular disease, hypertension, diabetes mellitus, osteoporosis, obesity and some types of cancers is the promotion of physical activity (General et al., 1996).

With the implementation of intervention programs can be used to increase physical activity in the field of adolescent desire. However, in this regard, the need for more effective behavioral interventions for sustainability and continuation of the behavior of the feeling; because half of the people who start physical activity in less than six months, they stop the activity program(Dishman, 1994).

The main issue in the research and application of physical activity of decisive accurate measurements (risk factors) of physical activity is associated with psychosocial and the measurement of behavioral interventions can lead to an increase in active physical behaviors to be regular physical activity(Marcus et al., 1992). Regular physical activity as one of the 15 priority change behavior by a group of specialists from the national organization to reach 150 to health by 2020 has been formulated and is one of the exclusive 11target relating to physical fitness, increase participation in physical activity by individuals(Costanzo et al., 2006).

Acceptance and maintenance of a dynamic lifestyle, with ferry people from the path of the collection of the various stages of preparation for addressing the sport possible. The most practical stage model of behavior change in sports, a theoretical model(Prochaska and DiClemente, 1986).

The use of a behavioral theory such as TTM, more effective interventions for planning an abundant sports report (Jordan et al., 2002, Gorely and Bruce, 2000, Plotnikoff et al., 2001). The model mentioned as a model of behavior change of the basic theory of psychotherapy is derived. 5.Prochaska believes in the pattern of behavior change that people initially assume it is on leave or do not understand a particular behavior is acceptable and the problem of knowledge (thinking ahead). But when there is a problem of consciousness is found seriously to examine the behavior change in the next few months pays (thinking)(Bock et al., 2001). in other words, the person on the stage before thinking of the type of behaviour are not aware of this because certain forces such as cognition, prejudice and makes knowledge of the behavior of that person at this stage does not have control over them, And the same to lack of awareness, it is possible to upgrade a person's health does not show any effort. The important thing is that the lack of thinking on it an interest in behavior change can be seen in person. The thinking of the time include perception, memory, thought, and the reasoning and is active as a mental process will be considered. The thinking at the highest form of creativity, In this stage the individual innovation, initiative and new perspectives about themselves and in addition to the logical and reasonable review regarding the issue, the outcome and their behavior are also of interest. So the view that conflicts with the pre-production of thinking and individual behavior change will be interested in(2007). The next default it is that people are prepared to make a change and to achieve the goals of the plan of behavior. Also during this planning to gather information about the subject, and to organize the information to action (to prepare). Of course, this requires the continuation of the change in the behavior of the month before I started, (act). In fact at this stage of educational intervention, if properly done, people to change behavior in the form of

practical and hands are doing the correct behavior. But this change in behavior is not fully stabilized and ultimately successful behavioral change for sustainability in people trying to make it look more stabilized. At this point in time the behavior of more than 6 months, after you have implemented forms (maintainability). The pattern of behavior change can work their sense of balance, the catalyst in the decision for the separation of the desired behavior of the advantages and disadvantages in improve patient(Rimer and Glanz, 2005).

Report of the World Health Organization projects that between 2005-2030 death rates will double in diabetic patients. Forman, observing the distances of diet and physical mobility way back knows diabetes.

The global epidemic disease control solution in the prediabetes State, primary prevention is based on a comprehensive program and encompasses the world's population, However, the Executive program on the identification and control of major risk factors have to rely on (Rafati et al., 2008).

In the study by taking advantage of the educational intervention based on the pattern of stages of change and its impact on TTM sport activities offsprings of diabetes and hypertension diseases in Firuzabad County tries it was that the results of this review in the prevention and control of chronic diseases and the plans and objectives of the macro and the micro decision-makers and managers valuable and useful and actually.

METHODS:

This research is a study of a kind of before and after intervention was that the sample size needed to perform this study according to the type of study and its objectives, target population, being infinite, considering the level of 5% to reach

the maximum error of the sample required, Regardless of the type II error 20% and 95% confidence intervals, and use the correct formula of infinite population that in this formula I Za a an standard normal distribution, Z = 1.96 and p = 50% and d = (p1-p2), and Considering the assumptions get 90 patients per study group that came from the children of 180 patients have filled with blood pressure and diabetes covers the rural centers and Firuzabad County to multi stage sampling methods were selected. The intervention strategy in this research include environmental health personnel to inform people by local authorities, elders, spiritual mobilization, site location and performer who was to attract people towards the program and plan with notification of the risks, side effects of the lack of physical activity, and sedentary life consequences of passive, Sensitive in case of chronic diseases, and the outcome was the result of action. Educational sessions during the three each session using 2 performer for 2 hours, the educational content about the health benefits of regular physical activity and proper (individual activity through which Pant, pounding heart, sweating and slash experience talking) and sufficient (at least 30 minutes of physical activity daily for 5 days a week) will implement and design. To determine the effectiveness and evaluation, intervention accomplished 6 months after implementation of the educational design and intervention related to the investigation questionnaire again in possession of both the Group and make it complete. Tools to collect and study data collection consists of two main parts, that the first part of a questionnaire relating to the demographic variables of children patients And the second part contains a questionnaire assessing structural change process model was provided by both the experimental and control group, in writing and in person, was completed before and after the intervention. That determine the steps to change the physical activity includes 5 question, change processes, structures, 18 questions, structural

balance and equilibrium in the decision, the question of structure and self-efficacy, 11 questions (for option 5) to be considered. Validity of questionnaire and Reliability referenced in previous studies has been confirmed (Shirazi et al., 2007, Moeini et al., 2010, McConnaughy et al., 1983). Data after you log on to the computer with the software SPSS version 18 and using descriptive statistics and statistical t-test, Chi-square, correlation, I'm Whitney case analysis.

RESULTS

Table 1: frequency distribution of participants in the study to the questions raised by the two groups

p-value	statistical index test	The case group	The control group	Variable		Time
0.231	1.4	3 (3.4)	6 (7.7)	A member of the Sports Club (Yes)		Before the intervention
0.099	3.74	81 (91)	86 (97.7)	A history of diabetes and hypertension on the parents (Yes)		
		26 (29.2)	31 (34.4)	diabetes		
		26 (29.2)	33 (36.7)	hypertension		
		37 (41.6)	26 (28.9)	None		
0.616	1.79				Catching the disease	
0.738	0.112	26 (29.2)	24 (27.3)	Exercise (Yes)Enough		
0.014	6.08	15 (18.1)	5 (5.8)	A member of the Sports Club (Yes)		After the intervention
0.099	3.74	81 (91)	86 (97.7)	A history of diabetes and hypertension on the parents (Yes)		
		27 (30.3)	31 (34.8)	diabetes		
		36 (40.4)	32 (35.9)	hypertension		
		26 (29.2)	26 (29.2)	None		
0.420	2.82				Catching the disease	
< 0.001	43.1	61 (79.2)	24 (28.9)	Exercise (Yes)Enough		

As well as the current status of the people regarding the exercise and diabetes status was compared between the two groups in the frequency distribution of the participants in the study by the two groups in table 1 come and answer them using the test X^2 – the two were compared. Before the educational intervention of statistically significant differences between the two groups did not exist, But after learning that the intervention was observed a significant difference in the percentage of users of the Club. The circumstances of the Group

experiment in the percentage of users was significantly more.As well as the percentage of people who had enough exercise significantly more training after the intervention of the control group. But the percentage of people diabetes in both groups was identical to continue after the intervention.

Table 2: comparison of the stages of behavior change in both groups before and after the educational intervention

p-value	statistical index test	Med(IQR)cace	Med(IQR)control	time
0.175	Z = 1.35	2 (1-3)	2 (1-3)	Before the intervention
< 0.001	Z=-7.42	4(4-5)	2 (1-3)	After the intervention

To compare the stages of behavior change and saw two groups of tests before and after the educational intervention of the test I was used that the results of this analysis, the Whitney is in table 3. The data in the middle (third quartile-the first quartile). Based on the results contained in this table before the intervention of a significant difference between the two training group was there, But after the educational intervention in two stages of behavior change distribution group test and saw a significant difference showed the way that group tested more in the percentage of the maintenance action steps or for example more than 50% of them were in the process of operation and maintenance, If the control group did not change much with the baseline and the majority of them were thinking and thinking in advance.

Table 3: distribution of frequency of two groups of people at different stages of behavior change before and after intervention

p-value	statistical index test	The case group	The control group	The stages of behavior change	time
		36(40.4)	28(31.5)	Precontemplation	Before the intervention
		21(33.6)	25(28.1)	contemplation	
		19(21.3)	15(16.9)	Preparation	
		7(7.9)	9(10.1)	Action	
0.397	4.06	6(6.7)	12(13.5)	Maintenance	
		1(1.1)	26(29.2)	Precontemplation	After the intervention
		10(11.4)	30(33.7)	contemplation	
		5(5.7)	14(15.7)	Preparation	
		31(35.2)	6(6.7)	Action	
< 0.001	68.1	41(46.6)	13(14.6)	Maintenance	

After the implementation of the results of our research and intervention education showed that more than three-quarters of people have high awareness (operation and maintenance) and only a small percentage of people (less than a quarter) have lower awareness (precontemplation, contemplation and preparation).

Based on the results of the achievement of our research as well as it can be inferred that in both the control group and test before starting the intervention of more than three quarters of the people on the steps of the disabled.

DISCUSSION

The changing of a person in the midst of a series of steps that the same steps to change the password that is can be forward, backward or rotated. Without planning and intervention are also being raised the possibility of returning, a rotating model(Reading Marcus and Velicer, 2003). Based on the structure of stages of change can cause the progress of training people in the passing of the steps (Findorff et al., 2007). The results of our study also suggest the efficiency and impact of educational programs designed to upgrade the performance of physical activity of children was under consideration. Provision

of information and appropriate knowledge of the effectiveness of the solution for the arrival of people previously thought to next stages of change(Solhi et al., 2012).People in this stage (thinking ahead) any information and knowledge and the aim of study was to reduce the number of passive and inactive persons (precontemplation, contemplation and preparation) and move to the side of the steps (action and maintenance) physical activity and proper nutrition in this regard was that after the implementation of the results of our research and intervention education showed that more than three-quarters of people have high awareness (operation and maintenance) And only a small percentage of people (less than a quarter) have lower awareness (previously thought, contemplation and preparation). From studies with findings that cross the people expressing the dramatic change from passive to active stages of the process can be applied to the results of khezeli et al(Parhoodeh et al., 2012), jalilian et al(Jalilian M, 2013), Abbasgholizadeh et al(Abbasgholizadeh et al., 2013), Hasani et al(Hassani et al., 2015), hamolah et al(Mardani Hamule et al., 2010), Hashemi et al(Hashemi et al., 2013). Findorff et al(Findorff et al., 2007), as well as educational program after weeks of physical activity with the change process and track the impact of the long educational program in the transfer of people from the steps of the operational stages of the action before the change process model refers. Educational design and its implementation in addition to the increasing awareness of people(Potts and Brandt, 1983, Lindorth et al., 1989), reception(Gross and Brandt, 1981), and apply the changes in the behavior and performance of individuals(Cohen et al., 1986), as well as the cause. In any case though knowledge is not merely a change of behavior, but of the necessities to be enumerated changes(Conner and Norman, 2005), educational intervention after evaluation (6 months later) In comparison with the baseline most of the test group has the right to change the steps

in the direction of progress for the promotion of physical activity.

What is evident in our study of effective and efficient role, physical activity behavior change regarding change; in the same field of Wilson and his colleague(Wilson and Schlam, 2004), in the research of the application of this model in motivational interviews for weight disorders and nutritional treatments, though the topic is different from our physical activity; inefficient knows that with the results of this study are in conflict about the acquisitions. Despite the positive progress in this category as well as people in the test group in preparation for the physical activity performed in the study of solhi et al(Solhi et al., 2012), because of the low turn-out of the group stages of the people changed to the active steps and the difference with the findings of the present study show that the dramatic change from earlier stages of the operational test group (previously thought, contemplation and preparation) Practical steps (enabled) after six months; significantly.

CONCLUSIONS:

According to the findings of the study and on the basis of the overall objectives and assumptions it can be said that the impact of using model-based educational interventions on physical activity promotion steps change the offsprings to chronic disease hypertension and diabetes with success.

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